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Feasibility and Preliminary Outcomes of a Brief Mindfulness-Based Intervention (BMBI) to Decrease Stress and Improve Well-Being in Secondary School Teachers

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FEASIBILITY AND PRELIMINARY OUTCOMES OF A BRIEF MINDFULNESS-BASED
INTERVENTION (BMBI) TO DECREASE STRESS AND IMPROVE WELL-BEING IN
SECONDARY SCHOOL TEACHERS

by

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DEDICATION

To my parents, Stacey and Kenneth, for their unwavering love, encouragement, guidance, and honesty.

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ABSTRACT

Teachers often experience symptoms of stress and burnout due to the chronicity of their occupational demands. These symptoms can negatively impact teachers' coping abilities and have implications for their physical and psychological health. Research indicates that mindfulness-based interventions (MBIs) have potential to help alleviate these symptoms of stress and burnout. Increasing numbers of MBIs for teachers have been implemented in the past five to ten years. However, few teacher-focused MBIs measure intervention feasibility and little data exist informing how to design and implement feasible MBIs in this context while simultaneously maximizing their potential positive effects. The current study examined the feasibility and preliminary outcomes of a randomized waitlist-control trial implementing a brief (four sessions, six hours) mindfulness-based intervention (bMBI) with a volunteer sample of secondary school teachers ($N = 23$). Results indicate that the bMBI was effective in significantly reducing teachers' symptoms of stress and burnout. Mixed-method assessment of intervention feasibility suggests that the bMBI was acceptable, practical, and implemented with a high degree of fidelity. Findings highlight important nuances regarding intervention feasibility and potential mechanisms of change. Implications and directions for future research are discussed.

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CHAPTER 1

INTRODUCTION

Teaching has been identified as a highly stressful occupation (Smith, Brice, Collins, Matthews, & McNamara, 2000) driven by the consistent attentional control and executive functioning demands required to effectively educate students with varying needs and skillsets (McCarthy & Lambert, 2006; Travers, 2001). Chronic stress results in teacher burnout (Maslach & Jackson, 1981; Maslach, Jackson, & Leiter, 1996). These symptoms of stress and burnout, both together and in isolation, impact teachers' regulatory and coping abilities (i.e., stress management), in addition to their physical and psychological health (Briner & Dewberry, 2007; Roeser et al., 2013). The functional consequences of these effects are often ineffective teaching (e.g., diminished self-efficacy), poor classroom management (e.g., unclearly stated values and expectations, lack of cohesion among students, poor student-teacher communication) (Briner & Dewberry, 2007; Jennings & Greenberg, 2009; Roeser et al., 2013), and, ultimately, teacher attrition (Betoret, 2006; Jepson & Forrest, 2006). Findings indicate that stress and burnout play a critical role in teacher attrition (Whipp, Tan, & Yeo, 2007), and that attrition rates remain problematic (i.e., the annual attrition rate rose 41% from 1987 to 2008; Ingersoll & Merrill, 2012) with only 40-50% of graduated teachers continuing to teach for five years after graduation (Ingersoll, 2003). Key areas of teachers' performance that are affected by stress and burnout (i.e., teacher self-efficacy, quality of student-teacher relationships, social-emotional competence; Zee & Koomen, 2016; Roorda,

Koomen, Spilt, & Oort, 2011; Jennings & Greenberg, 2009) have also been shown to negatively influence student outcomes, further underscoring the importance of mitigating these symptoms in teachers.

Teacher education programs do not formally target or directly facilitate “higher order” skills (i.e., stress management, emotion regulation, self-compassion, etc.) conducive to successfully coping with stressful vocational-specific demands (Roeser, Skinner, Beers, & Jennings, 2012; Roeser et al., 2013). More research is necessary to understand how to best combat teacher stress and burnout (Kyriacou, 2001; Lambert & McCarthy, 2006); reductions in these symptoms and the effects they have on both students and the overall learning environment should not be expected in the absence of specific and targeted interventions fostering the development of these higher order skills (Hughes, 2001).

Mindfulness training (MT) is one validated way to promote the development of these skills and increase overall health and well-being (Carmody & Baer, 2008; Grossman, Neiman, Schmidt, & Walach, 2004). Defined as “paying attention in a particular way: on purpose, in the present moment and non-judgmentally” (Kabat-Zinn, 1994, p. 4), mindfulness can be conceptualized as a trait, behavior (i.e., mindful meditation), state of awareness, or process (i.e., actively cultivating non-judgement) (Germer, Siegel, & Fulton, 2005; Keng, Smoski, Robins, 2011). An extensive and growing body of research has linked mindfulness to general psychological health in various populations and across a multitude of contexts (for a recent review, see Keng et al., 2011). More recent examinations have explored the utility of mindfulness in education with particular emphasis on delivering these skills to students as a means of

supporting their overall health and well-being (for recent reviews, see Zenner, Herrnleben-Kurz, & Walach, 2014; Carsley, Khoury, & Heath, 2018). Some of this research has indicated that the optimal way to promote mindfulness skills and behaviors school-wide is to deliver these skills to teachers (Zenner et al., 2014; Renshaw & O'Malley, 2014). However, despite existing literature suggesting that school-based mental health initiatives should begin with promoting the mental health of teachers (Weare & Nind, 2011), the majority of school-based MT studies target students rather than faculty.

The few teacher-based MT studies that do exist show promise in promoting positive outcomes across a multitude of personal (i.e., increases in mindfulness skills, focused attention, self-compassion; reductions in symptoms of anxiety and depression, etc.) and occupational domains (i.e., decreases in job-related stress, symptoms of burnout, etc.) (for recent reviews, see Klingbeil & Renshaw, 2018; Hwang, Bartlett, Greben, & Hand, 2017; Emerson et al., 2017; Lomas, Medina, Ivztan, Rupprecht, & Eiroa-Orosa, 2017). However, several teacher-focused MT studies yielding positive results did not directly account for or measure intervention feasibility or fidelity (Klingbeil & Renshaw, 2018). Feasibility measurement examining the acceptability, practicality, and demand of these interventions is essential in identifying whether these programs warrant future testing (Bowen et al., 2009). Additionally, an understanding of how these interventions are implemented, and with what level of fidelity, is critical in identifying both essential elements related to targeted mechanisms of change, as well as determining how these interventions can be best adapted and integrated in to differing educational settings (Sanetti & Kratochwill, 2009; Klingbeil & Renshaw, 2018). Ultimately, teachers' unique

and extensive time demands make accounting for these aspects of intervention design and implementation a necessity. These data are imperative to the development/refinement of feasible and efficacious MBIs teachers, as well as the overarching aim of delivering mindfulness skills to teachers as a means of reducing their symptoms of stress and burnout.

1.1 Understanding and Targeting Teacher Stress

Compared to empirical efforts within the educational context devoted to promoting child well-being and its associated effects on academic achievement (Blair & Diamond, 2008), an understanding of how to effectively combat teacher stress is both understudied and incongruent with the near unanimous acknowledgement that teaching is one of the most stressful occupations (Smith et al., 2000; Travers, 2001). Teaching is unique in that it requires uncommon levels of social-emotional functioning (e.g., working with several children simultaneously; Schultz & Zembylas, 2009; Zapf, 2002; Jennings & Greenberg, 2009), attentional control and decision-making ability (i.e., executive functioning; Roeser et al., 2012; McCarthy & Lambert, 2006; Travers, 2001), and behavior management skills (Kyriacou, 2001). Beyond working directly with students, teachers must also manage their workload and effectively navigate professional relationships within the school (i.e., colleagues, administration) and with the parents of their students, as well as attempt to balance these occupational responsibilities with personal responsibilities (i.e., family, etc.; Kyriacou, 2001).

Ineffective management of these obligations can result in symptoms of stress and burnout, which in turn can have deleterious effects on teachers' mental health (i.e.,

anxiety, depression; Roeser et al., 2012; Maslach et al., 2009). These difficulties can impact, either directly or indirectly, teachers' ability to engage with and educate their students, as well as their ability to effectively manage their classroom (Briner & Dewberry, 2007; Jennings & Greenberg, 2009; Roeser et al., 2013). These, as well as the more extreme effects of teacher stress and burnout (i.e., teacher absenteeism and attrition, Whipp et al., 2007), have important implications for student outcomes, including their academic achievement (Darr & Johns, 2008; Roeser et al., 2012; Miller, Murnane, & Willett, 2007), academic adjustment (Zee & Koomen, 2016), and academic engagement (Roorda et al., 2011). In aggregate, the immediate and chronic effects of teacher stress and burnout have multifaceted consequences on various levels of the educational system, from day-to-day interactions with students to systemic-level school district processes (i.e., health care costs; Roeser et al., 2013).

An understanding of the nature and sources of teacher stress has important implications for the development of effective occupational stress management interventions (SMIs) for teachers. SMIs exist at various levels across a number of organizations (e.g., health care, state agencies, military, education) and aim to decrease employees' work-related stress by either removing or decreasing sources of stress at work (primary-level), reducing symptoms of stress prior to substantial negative outcomes (secondary-level), or treating symptoms via access to medical professionals (tertiary-level; Richardson & Rothstein, 2008; Ivancevich, Matteson, Freedman, & Phillips, 1990). Primary-level SMIs are ultimately inapplicable to teachers because of the chronicity of their occupational demands. Tertiary-level SMIs, a more reactive approach to combating teacher stress, are also not ideal given that teachers' elevated levels of stress and their

effects may have already impacted teachers' functioning by the time they arrive at this level of intervention. However, secondary-level SMIs comprise the majority of SMIs (Holman, Johnson, & O'Connor, 2018) and appear more appropriate for teachers given their effectiveness in decreasing stress and improving well-being in individuals employed across various settings (for a review, see Richardson & Rothstein, 2008). Indeed, research suggests that this more preventative approach (i.e., secondary-level SMIs) to minimizing the effects of teacher stress and burnout is warranted and cost-effective, as compared to the financial (i.e., teacher attrition, district health care costs) and intangible (i.e., student outcomes) consequences associated with these symptoms (Flook, Goldberg, Pinger, Bonus, & Davidson, 2013).

Past efforts to reduce teacher stress (i.e., Bertoch, Nielson, Curley, & Borg, 1989; Cecil & Forman, 1990; Sharp & Forman, 1985; Tunnecliff, Leach, & Tunnecliff, 1985) have varied in method, scope, and outcome (Richardson & Rothstein, 2008). However, despite the recommendation that specific and targeted interventions are needed in order to effectively combat teacher stress and the effects it can have on multiple levels of the educational system (Hughes, 2001), research has yet to identify a program that can be systematically implemented into teachers' professional development training (Flook et al., 2013). Two primary reasons underscore the importance of such an intervention that is consistently effective in decreasing teacher stress: (a) teachers' occupational demands are both unique and persistent, and ineffective management of these demands can result in negative outcomes (i.e., deterioration of teachers' physical and psychological health, ineffective teaching practices, attrition, etc.); and (b) teachers are often ill-equipped to handle these demands due to a lack of attention devoted to developing higher-order skills

(e.g., stress management, emotion regulation, self-compassion) in preservice teacher education programs (Roeser et al., 2012, 2013).

Evidence exists for the effectiveness of MT (or interventions involving components of MT; i.e., meditation, relaxation) in reducing employees' stress across various occupations (Allen et al., 2015; Richardson & Rothstein, 2008). This finding has been extended to teachers (Emerson et al., 2017; Hwang et al., 2017; Lomas et al., 2017; Klingbeil & Renshaw, 2018) and mindfulness-based interventions (MBIs) represent a promising avenue for continued research regarding how to effectively alleviate teacher stress.

1.2 Mindfulness: Theory, Definition, and Application to Teachers

Originally introduced to Western medicine in the 1980s by Kabat-Zinn (2003) for the management of chronic pain, *mindfulness* has increased in popularity over the past two decades. However, a basic unified understanding of mindfulness, both theoretically (Dimidjian & Linehan, 2003) and operationally (Hayes & Wilson, 2003), is absent from the extant literature. This muddies the empirical landscape and unnecessarily diversifies the methodological practices through which mindfulness is studied (Brown, Ryan, & Creswell, 2007). This lack of agreement is at least partially due the cross-cutting applications of mindfulness to different interventions (i.e., self-regulatory capacity [Brown & Ryan, 2003]; acceptance skills [Linehan, 1994]; meta-cognitive skill [Bishop et al., 2004]), as well as factor analytic studies aimed at identifying distinct “facets” (i.e., factors) of mindfulness based on individuals' self-report of mindfulness skills (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown et al., 2007).

In addition to the inconsistent conceptual and methodological approaches to investigating mindfulness, various theoretical models attempt to explain the mechanisms of change involved in mindfulness training and how it impacts individuals' overall functioning (Shapiro, Carlson, Astin, & Freedman, 2006). However, Roeser et al. (2013) notes that underlying these theoretical perspectives is an understanding that mindfulness implicates complex neurocognitive functions (i.e., emotion regulation, executive functioning; Benson, 1975; Davidson & McEwen, 2012) and therefore prioritizes teaching individuals how to "recognize and regulate" their stress responses to non-life-threatening events with the overall aim of "down-regulat[ing] bottom-up, fast-onset stress reactions and to up-regulate slow, top-down nondominant response tendencies" (p. 3; Miyake, Friedman, Emerson, Witzki, & Howerter, 2000). It is through these processes that mindfulness is theorized to have widespread effects on various domains of human functioning. Accordingly, an extensive and growing body of evidence suggests increases in mindfulness coincide with improvements in mental health symptoms and psychological well-being, physical health, self-regulatory ability, and interpersonal functioning across various populations (Brown et al., 2007; Chiesa & Seretti, 2009; Mars & Abbey, 2010; Carmody & Baer, 2008; Grossman et al., 2004; Baer, 2003; Salmon et al., 2004). Unsurprisingly, mindfulness is now a primary therapeutic component of (i.e., mindfulness-based cognitive therapy [MBCT]; Segal, Williams, & Teasdale, 2002; mindfulness-based stress reduction [MBSR]; Kabat-Zinn, 1982), and embedded within several evidenced-based interventions (i.e., acceptance and commitment therapy [ACT]; Hayes, Strosahl, & Wilson, 1999; dialectical behavior therapy [DBT]; Linehan, 1993).

The disagreement among researchers regarding the structure of mindfulness (i.e., how aspects of mindfulness are categorized into distinct tenets/dimensions/axioms/factors; Baer et al., 2006; Carmody & Baer, 2008; Brown & Ryan, 2003; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) is accompanied by a general consensus regarding the essential elements of mindfulness (i.e., what is included in these dimensions, regardless of how they are categorized). A comprehensive and operationalized understanding of these elements is critical to understanding the salutary effects of mindfulness. Therefore, we draw on and summarize the three primary tenets of mindfulness outlined by those theoretical (i.e., Shapiro et al., 2006; Brown et al., 2007) and applied (i.e., Renshaw & O'Malley, 2014) conceptualizations based on Kabat-Zinn's (1994) original work and definition (i.e., "Paying attention in a particular way: on purpose, in the present moment and non-judgmentally"; p. 4): attentive awareness, receptive attitude, and intentionality. Overlap exists between these three tenets (i.e., not mutually exclusive) and mindfulness is "by no means a linear pathway; each variable supports and affects the others" (Shapiro et al., 2006, p. 377) to afford an individual the capacity to engage in a mindful process.

1.2.1 Attentive awareness. Described simply as "the practice of paying attention" (Shapiro et al., 2006, p. 376), attentive awareness involves sustaining one's attention over a period of time, unencumbered by external "stimuli" (i.e., sensory information, bodily sensations, judgmental thoughts; Renshaw & O'Malley, 2014, Brown et al., 2007). This aspect of self-regulatory ability involves various cognitive functions (Shapiro et al., 2006), including sustained attention (Parasuraman, 1998; Posner & Rothbart, 1992), attentional switching (Posner, 1980), and cognitive inhibition (Williams,

Mathews, & MacLeod, 1996). Operationally, cultivating attentive awareness by learning and later exercising these cognitive functions allows one to engage in adaptive self-regulatory processes (as opposed to automatic and maladaptive response patterns) in which one is better able to replace bottom-up processes (i.e., fight or flight) with non-automatic (i.e., learned) behavioral and emotional responses. Engagement in these processes ultimately mitigates negative psychological symptoms and improves well-being (Renshaw & O'Malley, 2014).

1.2.2 Receptive attitude. The attitudinal component of mindfulness (Kabat-Zinn, 1990; Shapiro & Schwartz, 1999, 2000), receptive attitude refers to the quality (i.e., the “how”) of one’s attentive awareness (Shapiro et al., 2006). Receptive attitude differentiates mindfulness from other orientations to awareness because it is characterized by adaptive qualities (e.g., curiosity, openness, acceptance, self-compassion; Siegel, 2007; Kabat-Zinn, 2003) and not those associated with maladaptive orientations to aversive experiences (e.g., rumination, experiential avoidance). Exercising open receptivity to all occurrences helps enable one to accept negative experience without judgement or active avoidance, thus allowing for the objectification and reshaping of negative thought processes contributing to one’s distress (Brown & Ryan, 2003; Shapiro et al., 2006; Renshaw & O'Malley, 2014).

1.2.3 Intentionality. The third tenet of mindfulness, intentionality (i.e., the “why”) is the “deliberate cultivation of an attentive awareness that is characterized by a receptive attitude” (Renshaw & O'Malley, 2014, p. 247). Intention is changeable and evolving (i.e., one’s intention may change over time; Shapiro et al., 2006). It is a critical component of mindfulness given that both attentive awareness and receptive attitude can

occur naturally, *without* intention (Brown et al., 2007); intentionality emphasizes that without purposeful and deliberate cultivation of attentive awareness and receptive attitude, one is unable to manifest mindfulness consistently (Renshaw & O'Malley, 2014). Ultimately, intentionality is critical to understanding how to cultivate mindfulness (Bishop et al., 2004; Shapiro et al., 2006) and may help provide insight into why some individuals find the process of engaging in mindfulness more difficult than others.

1.2.4 Teacher application. Most interventions within the educational context are designed for students (Flook et al., 2013) and the majority of past MBIs are no exception (for a recent review, see Felver, Celis-de Hoyos, Tezanos, & Singh, 2016). However, MBIs for teachers have received substantial attention over the past five to ten years, and these investigations show promise in promoting positive outcomes across a multitude of personal and occupational domains (Klingbeil & Renshaw, 2018; Hwang et al., 2017; Emerson et al., 2017; Lomas et al., 2017). Specifically, the available data suggests these interventions are effective in producing positive outcomes related to perceived stress (Beshai, McAlpine, Weare, & Kuyken, 2016; Roeser et al., 2013; Taylor et al., 2016), emotional exhaustion/symptoms of occupational burnout (Roeser et al., 2013), mindfulness skills (Benn et al., 2012; Beshai et al., 2016; Harris et al., 2016; Jennings, Snowberg, Coccia, & Greenberg, 2011; Jennings et al., 2013; Roeser et al., 2013), symptoms of anxiety or depression (Benn et al., 2012; Roeser et al., 2013), aspects of well-being (Beshai et al., 2016; Harris et al., 2016), classroom management/teaching efficacy (Harris et al., 2016; Jennings et al., 2011, 2013; Roeser et al., 2013), physiological indicators of stress (i.e., blood pressure, cortisol levels; Harris et al., 2016;

Roeser et al., 2013), and improved interpersonal relationships with students and student academic performance (Jennings et al., 2011).

Although these previous MBIs have demonstrated effectiveness in producing positive outcomes across multiple areas of teachers' functioning, most of these interventions involve substantial time commitments. Because of this, we believe many previous MBIs have not realized their full potential in promoting positive teacher outcomes due to issues of intervention feasibility. Therefore, we have developed and implemented a brief mindfulness-based intervention (bMBI) that includes the three critical elements of mindfulness (i.e., attentive awareness, receptive attitude, intentionality), alongside a specific focus on their integration, that is designed to be feasible, context-sensitive, and specific to teachers; and to address existing issues related to the potential limiting effects of previous teacher-focused MBIs.

1.3 Feasibility of MBIs for Teachers

Feasibility is defined as the extent to which an intervention is able to be implemented as planned within the setting/population (Bowen et al., 2009) and accounts for elements of acceptability (i.e., participants' reaction to the program, satisfaction, perceived sustainability), practicality (i.e., dose), and demand (i.e., response to recruitment, expressed interest). Feasibility studies may also involve preliminary evaluation of program outcomes via both measurement of mechanisms of change (Orsmond & Cohn, 2015) and process evaluation assessing intervention fidelity (Michie & Abraham, 2004). Despite studies reporting on the positive effects of MT for teachers, most do not directly account for or measure intervention feasibility or fidelity. This trend

is consistent with general MBIs conducted in the educational context (Gould, Dariotis, Greenberg, & Mendelson, 2016; Klingbeil & Renshaw, 2018) and is unsurprising given that feasibility data are underreported in general (Bird et al., 2013). However, the paucity of feasibility data is inherently problematic given that empirical investigations of teacher stress have identified sources of stress that stand to directly influence school-based intervention feasibility (i.e., time pressure, workload, conflict with colleagues, etc.; Skaalvik & Skaalvik, 2011, 2015; Shernoff, Mehta, Atkins, Tort, & Spencer, 2011; Emerson et al., 2017). This lack of data has resulted in little direction for researchers regarding how to design and implement MBIs for teachers that are both feasible and able to be executed with fidelity (Klingbeil & Renshaw, 2018). Subsequently, the current study addresses these barriers by implementing and measuring the feasibility and fidelity of a bMBI (four sessions, six total hours) designed to decrease stress and improve well-being in a sample of secondary school teachers. Given the novel brief design of the bMBI, indication of feasibility and fidelity can be critical for informing minimally-demanding, cost-effective intervention approaches for future teacher-focused MBIs. We examine multiple components of feasibility, including the acceptability, practicality, and demand of the bMBI, as well as the degree to which the bMBI was implemented with fidelity based on adherence to intervention framework and recommended dose.

1.3.1 Acceptability. A commonplace measure of feasibility, acceptability examines participants' reactions to a program by measuring their satisfaction with the intervention (Bowen et al., 2009). Several studies have reported on teachers' perceptions of MBIs via self-report acceptability measurement. Available data suggests that teachers found MBIs acceptable, as evidenced by high levels of satisfaction (Benn et al., 2012;

Jennings et al., 2011, 2013) and enjoyment (Beshai et al., 2016), likelihood of recommending the program to colleagues (Benn et al., 2012; Harris et al., 2016; Roeser et al., 2013; Jennings et al., 2011, 2013), and perceived benefits of the program (Jennings et al., 2013; Reiser et al., 2016; Ancona & Mendelson, 2014; Taylor et al., 2016; Beshai et al., 2016; Harris et al., 2016). Some of these studies included samples that were partially comprised of secondary teachers (Benn et al., 2012; Jennings et al., 2013; Roeser et al., 2013, Ancona & Mendelson, 2014; Taylor et al., 2016), whereas only two studies (Harris et al., 2016; Beshai et al., 2016) employed samples that were solely comprised of secondary school teachers. Teachers at this level are often more prone to stress as compared to their elementary school colleagues (Otero-López, Bolaño, Mariño, & Pol, 2010; Farber, 1984; de Anda et al., 1997) and, similar to these two previous studies, we only examine secondary school teachers. Overall, based on these previous findings across studies, it is expected that secondary school teachers will be receptive to MBIs.

1.3.2 Practicality. Practicality measures to what extent an intervention can be implemented when resources (e.g., finances, time) are restricted (Bowen et al., 2009). Given teachers' extensive time demands, program attendance and completion rates have been commonly conceptualized as measures of teachers' ability to carry out and engage in intervention activities (Bowen et al., 2009). However, studies' method of reporting on these measures of intervention practicality has varied widely. Data from the few studies that measured practicality in terms of average participant attendance across program sessions indicates that the practicality of MBIs for teachers appears promising. Specifically, multiple studies have reported high attendance rates (i.e., 5/6 sessions [Ancona & Mendelson, 2014]; 9.9/11 session [Benn et al., 2012]; 10/11 [Roeser et al.,

2013]) despite featuring significant variation in number of sessions and direct contact hours (i.e., 4.5 hours [Ancona & Mendelson, 2014] to 36 hours [Benn et al., 2012; Roeser et al., 2013]). Multiple studies have reported on other measures of program attendance, including qualitative descriptions of trends in program attendance throughout the course of intervention implementation. For example, one study measured changes in attendance rates across the intervention period (eight weeks) and found declines in percentage of participants who attended all sessions (i.e., 40%; Beshai et al., 2016). Similarly, another study reported that program attendance varied significantly across sessions and declined over the course of the intervention (Reiser et al., 2016). A single study set a minimum session attendance requirement/recommendation (two 20-minute sessions/week) and reported that only 32% of participants met the recommended session attendance, although 72% indicated that this recommendation was feasible (Harris et al., 2016). Overall, program attendance data reported in these previous studies appears to differ irrespective of study design, further highlighting the mixed results regarding the practicality of MBIs for teachers.

Program completion rate has been used as an additional measure of intervention practicality, though multiple studies did not report on this measure (Jennings et al., 2011, 2013; Taylor et al., 2016). Definitions of program completion across studies ranged from attendance at 50% (Harris et al., 2016) to 72% (Roeser et al., 2013) of program sessions, with multiple studies considering “completion” as attendance at approximately two-thirds or more of total program sessions (Ancona & Mendelson, 2014; Beshai et al., 2016; Reiser et al., 2016). Actual program completion rates ranged from 32% to 100%. Notably, the study with the lowest program completion rate (32%) was one requiring

attendance at the highest number of sessions (32/64; 50%), despite these sessions being significantly briefer in duration (i.e., 20 minutes; Harris et al., 2016). The highest program completion rate (100%) was reported by a study implementing eleven sessions and the most substantial direct contact hour commitment (i.e., 36 hours; Benn et al., 2012); though, importantly, this study did not specify their program completion criterion. An additional study (Roeser et al., 2013) utilized a design identical to Benn et al. (2012) and also reported a high program completion rate (87%). A comparable program completion rate (92%) was reported by Beshai et al. (2016), which included nine sessions and significantly fewer direct contact hours (11.25) than Roeser et al. (2013) or Benn et al. (2012). Lastly, two studies implementing programs with six sessions and fewer direct contact hours (i.e., 4.5 to 6) reported significantly lower program completion rates (Reiser et al., 2016: 47%; Ancona & Mendelson, 2014: 72%). Although the small amount of program completion data across these studies is mixed, the highest program completion rates were reported by studies featuring nine to eleven program sessions involving approximately eleven to thirty-six direct contact hours (Benn et al., 2012; Roeser et al., 2013; Beshai et al., 2016). Notably, these studies were not the most demanding with regards to program completion criteria (i.e., Harris et al., 2016; 32/64 sessions), nor were they the least demanding (i.e., Reiser et al., 2016; Ancona & Mendelson, 2014; 4/6 sessions). These preliminary findings warrant further investigation into what is occurring with less demanding intervention programming; specifically, why measures of practicality, and program completion rates in particular, are significantly lower in these briefer interventions as compared to those MBIs requiring more substantial time and attendance commitments.

1.3.3 Demand. Intervention demand is an indication of how likely a program is to be utilized by possible participants, or participants' actual use of an intervention (Bowen et al., 2009). Teacher-focused MBIs accounting for intervention feasibility have given disproportionately less consideration to measures of demand, as compared to intervention acceptability or practicality. Measures of demand across these studies have included participants' initial response to recruitment (i.e., percentage of teachers who participated in the intervention relative to the school's total number of faculty who could have possibly participated; Ancona & Mendelson, 2014), self-report estimates of home practice (Benn et al., 2012; Harris et al., 2016), and objective report of home practice (i.e., evaluation of teacher workbooks; Roeser et al., 2013).

One study (Ancona & Mendelson, 2014) explicitly reported on response to recruitment (study sample consisted of 55% of possible recruitment pool) and documented several possible barriers to teachers' participation (i.e., difficulty gaining access to teachers to explain the study; teachers' reluctance or inability to commit to afterschool activities; general misunderstanding of mindfulness). Three other studies measured demand by either including explicit home practice guidelines (i.e., 15 minutes daily), which researchers determined was met by approximately two-thirds of participants (Roeser et al., 2013), or self-reported estimates of home practice, which indicated that participants engaged in mindfulness practice on a daily (Benn et al., 2012) to weekly basis (Harris et al., 2016).

Closely related to response to recruitment, study sample size may be used as an additional and more objective measure of intervention demand. Approximately half of teacher-focused MBIs featured small sample sizes (i.e., final sample included <25

participants per group; Ancona & Mendelson, 2014; Benn et al., 2012; Jennings et al., 2011; Reiser et al., 2016), which may also be indicative of challenges associated with intervention demand. Overall, the small amount of data across these studies informing the demand of MBIs for teachers suggests difficulties with recruiting participants, which is likely closely related to the small sample sizes associated with several previous studies.

1.3.4 Mechanisms of change. While all teacher-focused MBIs tested whether significant changes were observed on primary outcome variables (for a comprehensive review of teacher-focused MBI efficacy, see Klingbeil & Renshaw, 2018), fewer studies tested the mechanisms responsible for this change. However, understanding why an intervention “works,” and the process through which change occurs (i.e., mechanism of change), is an important component of intervention feasibility and promotes the successful replication and broader dissemination of effective interventions (Kazdin, 2009; Gibbons et al., 2009; Bowen et al., 2009). Theoretical frameworks for MBIs for teachers (Roeser et al., 2012; Shapiro, Rechtschaffen, & de Sousa, 2016) are based on prior mindfulness research in adults (i.e., Hölzel et al., 2011) and implicate self-regulatory ability as the primary mechanism of change yielding improvements in targeted mechanisms (i.e., stress, burnout, etc.). Accordingly, MBIs for teachers that accounted for intervention feasibility have predominantly identified improvements in general self-regulatory ability (Benn et al., 2012; Jennings et al., 2011), or self-regulatory ability via increases in general mindfulness skills (i.e., attention, awareness, etc.; Beshai et al., 2016; Harris et al., 2016; Jennings et al., 2011, 2013; Roeser et al., 2013), as one of the primary mechanisms of change yielding improvements in targeted outcomes. Some studies have also identified improvements in emotion regulation (Benn et al., 2012; Harris et al., 2016;

Jennings et al., 2011, 2013; Taylor et al., 2013) and compassion/self-compassion (Beshai et al., 2016; Jennings et al., 2013; Roeser et al., 2013; Taylor et al., 2013) as additional mechanisms of change. One study (Reiser et al., 2016) proposed that psychoeducation regarding stress and mindfulness are primary mechanisms of change, in addition to development of teachers' individual network of social support; however, this study did not measure these constructs. While these data in aggregate suggest that self-regulatory ability is the primary mechanism of change at play in these interventions, more in-depth examinations are needed in order to fully understand other possible variables influencing intervention outcomes.

1.3.5 Fidelity. Assessing the degree to which an intervention was delivered as intended (i.e., intervention fidelity; Carroll et al., 2007) precludes valid interpretation of intervention outcomes, as well as accurate identification of mechanisms of change. Fidelity assessment also informs the broader dissemination of effective interventions via strategic and context-specific program adaptation (Sanetti & Kratochwill, 2009). Similar to general school-based MBIs (Gould et al., 2016) and the education context as a whole (Sanetti & Kratochwill, 2009), fidelity assessment among MBIs for teachers measuring intervention feasibility is scarce. To date, only a single study (Jennings et al., 2013) has included intervention fidelity as part of their measurement. Jennings and colleagues (2013) had a trained individual observe each program session and complete a post-session record sheet. This was compared to a record sheet completed by the program developers who implemented the intervention. Results indicated 100% agreement between the two process assessments. A second study (Roeser et al., 2013) took fidelity of implementation into consideration with their research design (i.e., discussed having the

same program facilitator deliver the intervention across settings to ensure fidelity). While this method helped ensure that all participants received a similar version of the program, it did not necessarily make certain that the program was implemented with a high degree of integrity, as the study did not explicitly measure intervention fidelity.

Overall, the teacher-focused MBIs that have accounted for at least some components of intervention feasibility feature significant variance in measurement, theoretical orientation, curriculum/content, and dose (see Table 1 for program demographics and Table 2 for program characteristics). Measurement of intervention feasibility within these studies also varied (see Table 3) and included: objective report (i.e., program attendance, program completion rates; Ancona & Mendelson, 2014; Benn et al., 2012; Harris et al., 2016; Reiser et al., 2016; Roeser et al., 2013), qualitative observation (i.e., response to recruitment; Ancona & Mendelson, 2014), self-report estimates/researchers' estimates (i.e., frequency of home practice; Benn et al., 2012; Harris et al., 2016; Roeser et al., 2013), and periodic (Reiser et al., 2016) and post-intervention evaluation surveys (Benn et al., 2012; Jennings et al., 2011, 2013; Beshai et al., 2016; Harris et al., 2016; Roeser et al., 2013; Taylor et al., 2016). Measures of intervention feasibility among MBI studies for teachers focused disproportionately on components of acceptability, while accounting for fewer aspects of practicality and demand. Some variation exists in hypothesized mechanisms of change across these studies, though most MBIs for teachers adhered to theoretical frameworks (i.e., Roeser et al., 2012; Shapiro, Rechtschaffen, & de Sousa, 2016) that emphasize the development of self-regulatory ability, including emotion regulation, via acquisition of mindfulness skills. Lastly, little-to-no attention has been paid to intervention fidelity and an understanding of

how to implement MBIs for teachers with a high level of integrity is a critical gap in the existing literature base.

1.4 The Current Study

Previous research demonstrates preliminary evidence for the effectiveness of MBIs in improving multiple areas of teachers' personal and occupational functioning. However, these investigations pay disproportionately little attention to intervention feasibility and fidelity. Subsequently, minimal data exist informing how to balance effective and context-sensitive implementation of MBIs for teachers while both maximizing the potential positive effects of these interventions and minimizing potential barriers to successful implementation. The current study aimed to address these gaps in previous research through designing and testing the feasibility of a brief mindfulness-based intervention (bMBI; four sessions, six total hours) to decrease stress and improve well-being in a sample of secondary school teachers.

The bMBI was designed to be feasible, context-sensitive, and specific to teachers. It adhered to a cognitive-behavioral framework of mindfulness and included the three critical elements of mindfulness (i.e., attentive awareness, receptive attitude, intentionality; Renshaw & O'Malley, 2014; Shapiro et al., 2006), as well as an explicit focus on their integration. To address multiple gaps in previous MBIs, we implemented several procedures aimed at maximizing the bMBI's acceptability, practicality, and demand, many of which were recommended by previous studies. These included the following: (a) tailoring the bMBI curriculum to fit teachers' specific vocational demands and focusing specifically on the development of self-regulatory skills (Emerson et al.,

2017; Lomas et al., 2017); (b) formally soliciting participants' availability prior to scheduling all program sessions; (c) obtaining certification for the bMBI as a formal six-hour professional development training in hopes of providing teachers with a tangible incentive for participation (Ancona & Mendelson, 2014, Benn et al., 2012); (d) consulting with school administration during the intervention design stage in order to ensure context-sensitive implementation; (e) presenting on the program at a school-wide faculty meeting several weeks prior to pre-intervention data collection in order to aid recruitment efforts (Ancona & Mendelson, 2014; Jennings et al., 2013; Reiser et al., 2016); and (f) employing a mixed-method assessment of intervention feasibility, including a summative process evaluation as a means of measuring intervention fidelity via intended dosage and program facilitators' adherence to original intervention framework.

The study's first aim was to examine whether the bMBI was effective in achieving both primary (i.e., reducing teachers' perceived stress and symptoms of burnout, improving teachers' well-being) and secondary (i.e., improving teachers' classroom climate) intended outcomes. Based on theoretical and preliminary empirical evidence, reductions are expected in perceived stress and symptoms of burnout, as are improvements in well-being, for teachers who participated in the intervention. Improvements in classroom climate are also expected given the hypothesized effects teacher mindfulness has on various aspects of the learning environment.

The study's second aim was to determine intervention feasibility, as measured by adequate (a) acceptability, (b) practicality, (c) demand, (d) increases in targeted mechanisms of change (i.e., overall mindfulness and teaching-specific mindfulness), and

(e) fidelity (i.e., intended dosage and facilitators' adherence to intervention framework). Due to its novel brief design, it is anticipated that participants will find the intervention acceptable, practical, and demonstrate adequate demand, as indicated by quantitative and qualitative data analyses at midpoint and post-intervention. It is also expected that there will be significant improvements observed in targeted mechanisms of change (i.e., participants' levels of overall mindfulness and teaching-specific mindfulness). Lastly, with clearly operationalized essential elements and the research team as program facilitators, it is expected that the intervention will be implemented with a high degree of fidelity (i.e., the intended dosage and high adherence to the original intervention framework), as evidenced by observer ratings on a summative process evaluation form.

CHAPTER 2

METHOD

2.1 Participants

Data for the current study were collected from faculty members ($N = 24$) at an academic magnet high school in South Carolina. Participants included eighteen teachers, four guidance counselors, one school psychologist, and one assistant principal, all of whom participated in both pre- and post-intervention data collection and were randomly assigned to either the intervention group or waitlist-control group after pre-intervention data collection. Study participation was restricted to faculty members of this single school. The sample was predominantly female (95.8%), White (91.7%), and ranged from ages 25 to 70 years (M age = 42.77 years; $SD = 11.25$). Regarding education level, 8% of participants reported having a bachelor's degree only, 83% reported having a master's degree, and 8% reported having a doctoral degree. Participants' years of experience in the education system ranged from 1 to 49 years ($M = 15.58$; $SD = 11.98$). Approximately 50% of participants indicated a history of receiving mental health services (e.g., individual/group therapy, marriage counseling).

One participant did not meet the program completion criterion (i.e., attending at least three out of four sessions; 75%) due to additional unforeseen afterschool commitments (i.e., tutoring, make-up assignments for students) and was subsequently excluded from analyses. This participant did not differ significantly on any baseline

measures of stress, burnout, well-being, mindfulness, or classroom climate compared to participants who remained in the program. Program completion criterion employed in the current study is stricter than criterion used in past investigations (i.e., 50-66%; Ancona & Mendelson, 2014; Beshai et al., 2016; Reiser et al., 2016; Harris et al., 2016) due to the novel brevity of the intervention design. All remaining participants attended at least three sessions and, subsequently, were considered to have completed the program. The final sample consisted of twenty-three participants (11 intervention, 12 waitlist-control; see Table 4).

2.2 Procedure

Intervention implementation and data collection procedures received dual approval by both the university's IRB and the school district's IRB. The study utilized a mixed-methods, pre/post, randomized waitlist-control design. Researchers consulted with the school's principal during the intervention development phase approximately six months prior to implementation to discuss interest, recruitment efforts, and possible barriers to implementation. Consultative feedback from school administration informed intervention design and participant recruitment. Researchers presented the study to school personnel at a monthly faculty meeting approximately one month prior to pre-intervention data collection in order to gauge faculty interest and recruit study participants.

Participants assigned to the intervention group received the program during the Winter/Spring (January-June) of 2018; the waitlist control group received the intervention during the Fall/Winter (September-December) of 2018. Researchers

formally solicited participants' availability via email prior to scheduling all program sessions in an attempt to maximize intervention feasibility given teachers' extensive time demands. All sessions took place on-site in a large multipurpose room and were delivered during the afterschool hours immediately following the cessation of the school day. Participants in the intervention group who successfully completed the program received six continuing education credits (CECs) for their participation and were provided refreshments at program sessions. Participants were otherwise not compensated for their involvement in the study.

2.2.1 Intervention. The mindfulness program employed in this study was developed by two doctoral candidates and an applied developmental psychologist. The program was sixteen (16) weeks in duration and included one ninety-minute (90) session per month (i.e., four total sessions; six total contact hours). Program curriculum adhered to a cognitive-behavioral model of mindfulness comprised of three separate dimensions: attentive awareness, receptive attitude, and intentionality (Renshaw & O'Malley, 2014; Shapiro et al., 2006). Sessions one through three corresponded to these three tenets (i.e., session 1: attentive awareness, etc.); an additional "integration" session constituted the fourth and final program session. This final session focused explicitly on how these three mindfulness constructs are operationally interrelated and how participants could subsequently identify tangible ways in which mindfulness skills and behaviors could be integrated into their lives. All participants were issued personalized workbooks facilitating and corresponding to various program components including: didactics (i.e., material presented in session), discussion questions (i.e., open-ended questions facilitating in-session discussion), journal entries (i.e., open-ended questions to be

completed shortly after session), and “in-between notes” (i.e., open-ended questions to be completed prior to the following session).

Each session followed a similar progression: (1) review of content from previous sessions (excluding session 1); (2) present-moment awareness exercise; (3) didactic presentation pertaining to the individual session topic; (4) mindfulness activity where participants identify an operationalized definition of the topic skill (e.g., receptive attitude), as well as model and practice the skill; (5) group discussion facilitated by open-ended questions; and (6) closing exercise (e.g., progressive muscle relaxation, meditation). Participants were encouraged to complete both a journal entry and “in-between notes” in an effort to promote practice and application of mindfulness skills outside of individual sessions. Intervention curriculum was specifically adapted for teachers; program facilitators encouraged participants’ exploration of how program content could inform both their personal and professional lives. Specific information on content and key themes of individual sessions is contained in Table 5.

2.3 Measures

Basic demographic data (e.g., age, race, gender, level of education, years of experience) were obtained for all participants during pre- and post-data collection. Participants’ past or current involvement with mental health services (i.e., individual/group therapy, marriage counseling, etc.) was also assessed at both pre- and post-data collection.

2.3.1 Teacher stress. Teacher perceived (i.e., self-report) stress levels were assessed using the Teacher Stress Inventory (TSI; Fimian, 1988), a widely used measure

consisting of forty-nine questions rated on a five-point Likert scale (1 = *Not true*, 5 = *Extremely true*). The TSI contains ten individual subscales measuring different aspects of occupational stress (e.g., Professional Distress, Time Management) as well as operationalized manifestations of that stress (e.g., Emotional, Behavioral). Items on each subscale were summed and averaged to create a total subscale score; the ten subscale scores were also summed and averaged to create a total stress score. The current study utilized the total stress score as an overall measure of perceived teacher stress. Higher scores indicate greater amounts of teacher perceived stress. The TSI has demonstrated adequate psychometric properties in prior studies (Fimian & Fastenau, 1990; Fimian, 1988) and internal consistency of the full scale in the current sample was excellent ($\alpha = .91$).

2.3.2 Teacher burnout. Teacher symptoms of burnout were measured using the Maslach Burnout Inventory-Educator's Survey (MBI-ES; Maslach, Jackson, & Leiter, 1996), a tool consisting of twenty-two items rated on a seven-point Likert scale (1 = *Never*, 7 = *Every day*). The MBI-ES yields the following three individual subscales by summing and averaging respective items: Emotional Exhaustion (nine items; $\alpha = .82$), Depersonalization (five items; $\alpha = .64$), and Reduced Personal Accomplishment (eight items; $\alpha = .82$). Aligned with previous research (Roeser et al., 2013), the current study summed and averaged scores across these three subscales to create a total burnout score. There is extensive psychometric validation for the MBI-ES across various educator samples (Byrne, 2011; Kokkinos, 2006) and the MBI has been used in the large majority of studies investigating symptoms of occupational burnout across professions (Hastings, Horne, & Mitchell, 2004).

2.3.3 Teacher well-being. Teacher well-being was measured using the Symptom Assessment-45 Questionnaire (SA-45; Maruish, Bershinsky, & Goldstein, 1998), a brief assessment of well-being evaluating symptoms contributing to different aspects of psychological distress. Adapted from the longer-form Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1994), the SA-45 utilizes a five-point Likert scale (1 = *Not at all*, 5 = *Extremely*) assessing the degree to which participants experienced various psychological problems (e.g., anxiety, depression) over the past seven days. Symptoms are organized into nine different subscales and together provide a collective summary raw score, the Global Severity Index (GSI) score. The current study utilized the GSI score as an overall measure of teacher well-being. Lower scores indicate higher well-being. Prior research demonstrates adequate psychometric properties in both inpatient and community populations (SAI, 1998). Internal consistency of the SA-45 in the current sample was excellent ($\alpha = .92$).

2.3.4 Classroom climate. The College and University Classroom Climate Inventory (CUCEI; Fraser, Treagust, & Dennis, 1986) was used to measure participant perceptions of classroom climate. Originally developed to measure psychosocial aspects of classroom environments in higher education settings, the CUCEI consists of forty-nine items utilizing a four-point Likert scale (1 = *Strongly agree*, 4 = *Strongly disagree*). Five of the original seven subscales (totaling 35 items) were used in the current study in order to measure classroom climate: Personalization ($\alpha = .53$), Involvement ($\alpha = .66$), Satisfaction ($\alpha = .79$), Task Orientation ($\alpha = .61$), and Individualization ($\alpha = .81$). However, the Personalization subscale was excluded from analyses due to unacceptable levels of internal consistency (i.e., $\alpha \leq .60$; DeVellis, 2016). Scores from the remaining

four subscales (28 total items) were summed and averaged to create a total classroom climate score. Previous research demonstrated adequate construct validity as each of the CUCEI subscales were significantly correlated in the expected direction with those of conceptually-linked constructs (Fraser et al., 1986). Lower scores indicate more positive perceptions of classroom climate.

2.3.5 Feasibility. A mixed methods approach (i.e., objective report, qualitative observation, qualitative feedback, quantitative measurement) was used to measure program feasibility (i.e., acceptability, practicality, demand). A feasibility questionnaire (see Appendix A for individual items) was created for the present study to measure participants' perceptions of intervention acceptability (e.g., "I am satisfied that I took part in this program") and practicality (e.g., "The frequency of program sessions was appropriate"). Previous research informed the construction of this questionnaire and individual items were modeled based on those studies that explicitly reported on intervention acceptability and practicality via participant questionnaire (Benn et al., 2012; Jennings et al., 2011, 2013; Reiser et al., 2016; Roeser et al., 2013; Taylor et al., 2016). Questionnaire items at midpoint were amended to fit temporal context (i.e., "In the program thus far...") and participants' responses at midpoint were used as periodic assessment of feasibility to inform ongoing intervention implementation. The questionnaire included both quantitative (i.e., five-point Likert scale; 1 = *Strongly disagree*, 5 = *Strongly agree*) and qualitative (i.e., open-ended) items in order to encourage participants' individual feedback regarding intervention feasibility (e.g., "If you do not feel as if session duration/frequency was appropriate, please provide a recommendation of what would work better for future programs.").

Intervention practicality was measured using select items from this questionnaire, in addition to examination of program retention (i.e., attrition rate), session attendance (i.e., percentage of participants who attended each of the four program sessions), and program completion (i.e., percentage of participants who attended at least 75% of sessions). Intervention demand was measured using a post-intervention review of teacher workbooks assessing participants' completion of the individual journal entries and "in-between-session notes," respectively, corresponding to sessions one through three (i.e., six total components), as well as participants' initial response to recruitment (i.e., percentage of teachers who participated in the intervention relative to the school's total number of faculty). Additionally, the study also provided participants the opportunity to provide broad feedback about the intervention on the feasibility questionnaire at midpoint and post-intervention via an open-ended question (e.g., "Please provide any other thoughts you have about the program"). Participants' responses to this question were grouped into five main themes using semantic thematic analysis and informed feasibility measurement.

2.3.6 Mechanisms of change. Increases in targeted mechanisms of change were assessed using two validated instruments: the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2008), designed to measure aspects of mindfulness an individual can possess or learn through mindfulness training; and the Mindfulness in Teaching Scale (MTS; Frank, Jennings, & Greenberg, 2016), designed to measure aspects of mindfulness specific to teaching. The FFMQ is a 39-item measure using a five-point Likert scale (1 = *Never or very rarely true*, 5 = *Very often or always true*). It measures the following five mindfulness skills, represented as individual subscales, that previous research indicates

are indicative of effective mindfulness practice: Observing, Describing, Act with Awareness, Nonjudgement of Inner Experience, and Nonreactivity to Inner Experience. The current study utilized a single total score by summing and averaging all individual items to create a total mindfulness score. Higher scores are indicative of more mindfulness. Internal consistency for the current sample was excellent ($\alpha = .90$).

The MTS is a 14-item measure employing a five-point Likert scale (1 = *Never true*, 5 = *always true*). It includes a five-item Interpersonal subscale and a nine-item Intrapersonal subscale, each representing mindfulness skills specific to teaching, including teachers' ability to self-regulate in their classroom, demonstrate appropriate responsiveness and sensitivity while interacting with students, and remain focused on the present moment throughout their day (Frank et al., 2016). The current study utilized a single total score by summing and average all items for a total teaching-specific mindfulness score. Higher scores are indicative of more mindfulness in teaching. Internal consistency for the current sample was good ($\alpha = .80$).

2.3.7 Fidelity. A summative process evaluation created for the present study was used to measure intervention fidelity, including elements of dosage and program adherence (Carroll et al., 2007) to the intervention framework. The program was delivered by two doctoral candidates (two of the three program developers) who manualized program content by outlining essential elements and adhering to a consistent structure for each individual program session (see Appendix B for process evaluation). All program sessions were audio and video recorded. A trained observer and one of the program's developers watched recordings of each individual program session independently and completed respective summative process evaluations for each session.

Overall observer-rater agreement between the two observers on omnibus process evaluation ratings of intervention dosage (95%) and adherence (89%) was high. Raters discussed disagreements until unanimous agreement was reached for all process evaluation ratings of intervention fidelity.

Questions pertaining to dosage (12 total items) are rated using a binary response (0 = no, 1 = yes) and questions pertaining to adherence (35 total items) are rated on a 4-point scale (1 = none, 4 = all). All fidelity items represent specific components of process evaluation framework dimensions. These dimensions assess facilitator implementation of elements essential to the intervention: Knowledge (6 items; represents skill delivery, facilitator instruction, and focus on participants' mastery of skills), Participation (5 items; represents participants' active engagement and participation in intervention activities), Personal Application (6 items; represents opportunities for participants to apply intervention knowledge/activities to their personal lives), Educator Application (2 items; represents opportunities for participants to apply knowledge/activities to their lives as an educator), Modeling (8 items; represents facilitators' modeling of skills/techniques in session that are indicative of a mindful practice), and Implementation (20 items; represents general program components necessary for effective program delivery) (see Appendix B for complete definitions of all framework dimensions). Creation of these dimensions was informed by previous research on intervention fidelity (Pérez, Van der Stuyft, del Carmen Zabala, Castro, & Lefèvre, 2015); they reflect both general (i.e., Implementation, Knowledge, Participation) and context-specific indicators of intervention fidelity (i.e., Personal Application, Educator Application), as well as a Modeling dimension given the importance of the program facilitator's role in MBIs

(Kabat-Zinn, 2011; Segal et al., 2002; Hwang et al., 2017). Framework dimension items are summed and averaged in order to create individual summary scores for individual sessions. For dosage, the *a priori* goal was for all individual session total dosage scores (i.e., total dose delivered) to be $\geq 75\%$. For adherence, the *a priori* goal was for all individual session total adherence scores to be ≥ 3.00 (Wilson et al., 2011).

2.4 Analytic Procedure

2.4.1 Sample equivalence. All analyses were conducted using SPSS v. 25.0 (IMB Corp, 2017). First, following randomization, chi square statistics were used to compare the intervention and waitlist-control groups with respect to gender, age, race, years of experience, level of education, and history of receiving mental health services.

2.4.2 Pre-intervention equivalence on teacher outcome measures. Independent samples *t*-tests were used to examine the equivalence of intervention and waitlist-control groups on measures of primary teacher outcomes at pre-intervention.

2.4.3 Pre-intervention equivalence on mechanism of change measures. Independent samples *t*-tests were used to examine the equivalence of intervention and waitlist-control groups on measures assessing mechanisms of change at pre-intervention.

2.4.4 Effect of bMBI on teacher outcome measures. Dependent samples *t*-tests were used to examine changes from pre- to post-intervention in the intervention and waitlist-control groups, respectively, on all teacher outcome variables. Cohen's *d* effect sizes were calculated for the change from pre- to post-intervention in the intervention and waitlist-control groups, respectively.

2.4.5 Feasibility. Descriptive statistics were calculated for participants' responses on the intervention feasibility questionnaire at midpoint and post-intervention measurement. Qualitative data collected at midpoint and post-intervention were analyzed by two independent coders at the semantic level using inductive (i.e., "bottom up") thematic analysis (Patton, 1990), and followed the analytic procedures described by Braun and Clarke (2006). This method involves first examining participants' written responses and identifying meaningful units of text relevant to the intervention. Second, both raters independently coded each participant response with one or more provisional codes. Third, provisional thematic codes were compared across raters and were discussed until unanimous agreement was reached regarding individual codes for each individual participant response. Lastly, both raters systemically reviewed these codes and grouped them into overarching analytic themes. The inductive thematic analysis resulted in 17 different codes, which were then grouped into five key themes (see Table 10 for a complete list of themes and codes).

Additional measures of program feasibility included response to recruitment, participant retention, participant attendance and program completion, and a review the teacher workbooks that were made available at post-intervention measurement. Dependent samples *t*-tests were used to examine targeted mechanisms of change (i.e., general mindfulness and teaching-specific mindfulness) from pre- to post-intervention in the intervention and waitlist-control groups, respectively. Cohen's *d* effect sizes were calculated for the change from pre- to post-intervention in the intervention and waitlist-control groups, respectively. Lastly, in order to assess intervention fidelity,

descriptive statistics were calculated for the two observers' respective ratings of individual items on the summative process evaluation for each intervention session.

CHAPTER 3

RESULTS

3.1 Sample Descriptives

Analyses indicated no significant differences across experimental groups with respect to gender, age, race, years of experience, level of education, or history of receiving mental health services. Additionally, no significant differences between experimental groups were noted on any teacher outcome measure or mechanism of change measure at pre-intervention.

3.2 Aim 1: Preliminary Intervention Outcomes

The study's first primary aim was determining whether the bMBI was effective in (a) reducing teachers' perceived stress and symptoms of burnout, and (b) improving teachers' well-being. A secondary aim was determining whether the bMBI was effective in improving teachers' classroom climate. Results of dependent samples *t*-tests for pre- to post-intervention on all teacher outcome variables are reported in Table 6.

3.2.1 Effect of bMBI on teacher stress and burnout. Results from dependent samples *t*-tests indicated significant reductions in self-reported stress for the intervention group from pre- to post-intervention ($t(10) = 5.02, p = .001$). No significant reductions in self-reported stress from pre- to post-intervention were observed for the wait-list control group ($t(11) = .803, p = .439$). Similarly, the intervention group reported significant

reductions in symptoms of burnout from pre- to post-intervention ($t(10) = 3.01, p = .013$), where no significant reductions in burnout from pre-to post-intervention were observed for wait-list control group ($t(11) = .771, p = .457$). Effect sizes were large to very large for both the reductions in perceived stress ($d = 1.54$) and symptoms of burnout ($d = .92$) observed in the intervention group from pre- to post-intervention. Effect sizes were of small magnitude in the waitlist-control group on measures of perceived stress ($d = .24$) and symptoms of burnout ($d = .23$) from pre- to post-intervention.

3.2.2 Effect of bMBI on teacher well-being. No significant improvements in well-being from pre- to post-intervention were observed for the intervention ($t(10) = 1.139, p = .281$) or waitlist-control group ($t(11) = 1.488, p = .165$). Effect sizes were similarly small for improvements in well-being from pre- to post-intervention for both the intervention group ($d = .34$) and waitlist-control group ($d = .43$).

3.2.3 Effect of bMBI on classroom climate. No significant improvements in classroom climate from pre- to post-intervention were observed for the intervention group ($t(10) = .830, p = .426$). Significant improvements in classroom climate were noted in the waitlist-control group from pre- to post-intervention ($t(11) = 3.927, p = .002$). Effect sizes were small for improvements in classroom climate from pre- to post-intervention for the intervention group ($d = .29$), whereas the waitlist-control group evidenced a large effect ($d = 1.13$) of classroom climate from pre- to post-intervention. However, compared to the intervention group, the waitlist-control group reported poorer classroom climate at baseline, and continued to report poorer classroom climate than the intervention group despite these significant and large improvements at post-intervention.

3.3 Aim 2: Intervention Feasibility

The study's second aim was determining whether the bMBI was feasible, as demonstrated by adequate levels of (a) acceptability, (b) practicality, (c) demand, (d) increases in targeted mechanisms of change (i.e., teachers' overall mindfulness and teaching specific mindfulness), and (e) intervention fidelity (i.e., dosage and adherence). Participants' ratings of intervention feasibility questionnaire items at midpoint and post-intervention are contained in Table 7. Results of dependent samples *t*-tests for pre- to post-intervention on all mechanisms of change variables are reported in Table 8. Results of the summative process evaluation assessing intervention fidelity are contained in Table 9.

3.3.1 Acceptability. Overall, results from select items on the intervention feasibility questionnaire at post-intervention indicate that participants found the intervention highly acceptable. Specifically, on a scale of 1 (strongly disagree) to 5 (strongly agree), participants, on average, "agreed" that the goals of the program were communicated clearly ($M = 4.60, SD = .51$). Additionally, on average, participants "agreed" that the intervention was applicable to their personal life ($M = 4.40, SD = .69$) and their life as an educator ($M = 4.50, SD = .52$). Regarding intervention content, participants, on average, "agreed" that exercises provided in the teacher workbook were helpful ($M = 3.90, SD = .31$) and the directions for those exercises were easy to follow ($M = 4.00, SD = .66$). Participants also "agreed," on average, that they felt comfortable engaging in activities during program sessions ($M = 3.90, SD = .99$); however, this item had a slightly larger standard deviation than most other questionnaire items. Participants indicated that they found the content covered in the program useful ($M = 4.30, SD = .48$).

While participants, on average, were “neutral” in their ratings of how difficult they found it to apply program strategies/techniques outside of sessions ($M = 3.40$, $SD = 1.07$), this item had the largest standard deviation of any other acceptability item at post-intervention. Participants also “agreed,” on average, that the number of participants involved in program sessions was appropriate ($M = 4.10$, $SD = .56$). Overall, participants, on average, “agreed” that they were satisfied they took part in the program ($M = 4.10$, $SD = .56$) and also “agreed” that the program helped them gain confidence in effectively managing their stress ($M = 4.00$, $SD = .66$).

3.3.2 Practicality. Results from the intervention feasibility questionnaire at post-intervention indicated that participants, on average, “agreed” that the frequency ($M = 3.90$, $SD = .56$) and duration ($M = 4.30$, $SD = .48$) of sessions were appropriate. The program retention rate was 91% with only one participant who dropped out of the study. Overall program attendance was exceptional (M attendance = 3.6/4 sessions; 7 of 11 participants attended all sessions) and comparable to a small number of previous studies that reported on similar measures of program attendance (Ancona & Mendelson, 2014; Benn et al., 2012; Roeser et al., 2013). One-hundred percent of participants who did not drop out of the study met the *a priori* attendance rate goal (i.e., present at 75% of program sessions). Despite implementing a stricter program completion criterion due to the brevity of the intervention, this program completion rate is higher than previous teacher-focused MBIs, including those reporting similar rates of attendance (Ancona & Mendelson, 2014; Benn et al., 2012; Roeser et al., 2013).

3.3.3 Demand. Analysis of outside-of-session engagement with program material was examined for 82% (9 of 11) of participants who were available and made their

workbooks accessible for review at post-intervention. The percentage of participants who completed journal entries in their individual workbooks following program sessions increased over the course of the intervention (session 1: 67%; session 2: 78%; session 3: 89%). The percentage of participants who completed “in-between notes” in their individual workbooks following program sessions also increased from the beginning of the intervention (session 1: 33%; session 2: 78%; session 3: 67%). Regarding response to recruitment, over 80% of teachers who initially expressed interest in the study participated in the intervention. However, our sample constituted only 30% of the possible recruitment pool (i.e., total number of school faculty).

3.3.4 Qualitative feedback. Three of the eleven participants elected to provide responses to the optional open-ended feasibility question at midpoint, whereas ten of the eleven participants did so at post-intervention. Analysis of these qualitative responses engendered five distinct themes: (a) positive feedback about the program, (b) dosage, (c) time constraints, (d) climate, and (e) recommendations for improvement.

3.3.4.1 Positive feedback about the program. Consistent with participants’ responses to acceptability items on the feasibility questionnaire, participants indicated that program content was helpful (e.g., “This was very helpful!”; “The breathing techniques were very helpful...to manage stressful situations”), enjoyable (e.g., “I enjoyed the program”; “Very glad I participated; I am really enjoying the information”), and thought-provoking (e.g., “It is interesting and thought-provoking”).

3.3.4.2 Dosage. Unsurprisingly, given the brief design of the program, participants provided feedback regarding intervention dosage. Despite overall high

ratings of practicality on the feasibility questionnaire regarding session frequency and duration, multiple participants indicated the need for a higher dose in the form of more program sessions (e.g., “Need more months of sessions”; “...it seems like more sessions would be helpful”). Moreover, the majority of participants who provided feedback regarding intervention dosage suggested a need for increased communication between program facilitators and participants in between program sessions. The purpose of this communication ranged from helping teachers maintain motivation to engage in program exercises (e.g., “We need ‘check-ins’ of some sort to help keep us motivated (or remind us) to use the exercises”) to general reminders about program activities (e.g., “More ‘check-ins’ would have been helpful”; “I think it would have been helpful to email reminders about doing homework/activities”).

3.3.4.3 Time constraints. Consistent with the wealth of literature documenting teachers’ time demands, a key theme within participant responses indicated various notable time constraints. For example, despite program facilitators formally soliciting participants’ availability prior to all program sessions in an effort to maximize intervention feasibility, multiple participants reported scheduling difficulties (“...scheduling is tough”; “The only complaint is my schedule...”). One participant cited personal obligations as a barrier to session attendance (e.g., “...it was sometimes difficult to manage my time because I have children to pick up from school”). Another participant reported difficulty prioritizing program activities due to daily tasks (e.g., “It was easy to let this fall behind daily tasks”). Lastly, one participant suggested that “the program should take place at a less busy time,” though did not provide details as to whether this was in regard to time of day (i.e., afterschool hours) or time of year (i.e., summer).

3.3.4.4 *Climate.* Participants' qualitative feedback regarding group climate included physical setting and interpersonal dynamics, as well as mechanisms of perceived effectiveness. One participant reported a need for group members to be more vulnerable during session (e.g., "Being vulnerable/willing to take a risk is helpful"), and further explained that multiple participants were resistant to share (e.g., "More sharing would be helpful but some people were resistant. Digging deeper helps, silence doesn't"). One participant commented that the room where sessions took place (i.e., large multipurpose room) may have impacted the group dynamic (e.g., "A more intimate space to meet (smaller classroom, etc.) may have made the group feel more intimate with each other"). Similarly, despite overall strong acceptability on the feasibility questionnaire regarding the number of participants involved in session, one participant noted that the environment was more conducive to personal disclosure when fewer people were present in session (e.g., "The size of the group was good, but the last session was a small group and it seemed more comfortable and easier to share"). Lastly, one participant indicated that participating in the group sessions was an effective form of social support (e.g., "I think that part of the effectiveness is sharing/hearing others").

3.3.4.5 *Recommendations for improvement.* Multiple elements of participants' qualitative feedback contained in the dosage (i.e., "check-ins" between sessions), time constraints (i.e., timing of program), and climate (i.e., physical meeting space, group size, interpersonal dynamics) themes, respectively, have implications for program improvement. However, qualitative data coded and grouped into this theme included participants' explicit recommendations for program improvement. Multiple participants stated that they would prefer the program content to include more school-

specific/classroom application of skills (e.g., “Greater school-specific application/examples (how to implement in the classroom)”; “I would like to see more activities for use in the classroom”). One participant reported difficulty understanding unfamiliar language contained in program content (e.g., “The jargon was hard to comprehend sometimes because the definitions often contained language I was not familiar with, so a lot of the time I was processing or trying to understand”). Lastly, one participant noted that “I feel like we are still sometimes on the surface,” though it was unclear whether this was related to program content, group discussion, or another aspect of the program.

3.3.5 Mechanisms of change. Dependent samples *t*-tests indicated no significant increases in mindfulness from pre- to post-intervention were observed for the intervention group ($t(10) = -1.798, p = .102$) or waitlist-control participants ($t(11) = -.784, p = .449$). Similarly, no significant increases in teaching-specific mindfulness from pre- to post-intervention were observed for the intervention ($t(10) = .920, p = .379$) or waitlist-control group ($t(11) = -.626, p = .544$). However, effect sizes supported the hypothesized direction of change. Effect sizes were of medium magnitude for increases in general mindfulness from pre- to post-intervention for the intervention group ($d = .56$) and of small magnitude for the waitlist-control group ($d = .23$). A small effect ($d = .32$) of teaching-specific mindfulness was observed in the intervention group from pre- to post-intervention, whereas the waitlist-control group evidenced a small negative effect ($d = -.18$) of teaching-specific mindfulness from pre- to post-intervention.

3.3.6 Fidelity. As another important measure of intervention feasibility, the current study also examined the degree to which the bMBI was implemented with

fidelity, as demonstrated by adequate levels of (a) dosage and (b) adherence to the intervention framework.

3.3.6.1 Dosage. Overall delivered dose criteria ($\geq 75\%$) was met in each of the four sessions with 90% of components delivered in three sessions (sessions 1, 2, and 4) and 100% of components delivered in the remaining session (session 3). Notably, the total dosage percentage score for the modeling dimension was 62.5%. This low dosage score is driven by program facilitators not consistently addressing participants by their first names during discussion (25% of the time across all sessions). However, the dosage score for the other modeling item (i.e., “Discussion was conducted in a supportive and non-judgmental environment”) was 100%. Total percentage scores for all other dosage framework dimensions were 100%. Overall, the total dosage percentage score across all dimensions for the entire intervention was 92.5%.

3.3.6.2 Adherence. All sessions exceeded the total adherence score criteria (≥ 3.00 rating) for intervention implementation. Notably, the total adherence score for the modeling dimension was slightly below this threshold (2.99). This score is driven by program facilitators inconsistently providing participants the opportunity to “opt out” of the introductory exercise (2.50), session-specific exercise (1.75), and concluding exercise (1.33) across program sessions. Total scores for all other adherence framework dimensions were 3.75 or higher. Overall, the total adherence score for the entire intervention across all dimensions was 3.75.

CHAPTER 4

DISCUSSION

The principal aim of this study was to test whether a brief mindfulness-based intervention (bMBI) specifically developed to reduce stress and improve well-being in secondary school teachers was feasible and effective in reducing symptoms of stress and burnout and improving overall well-being. Given the theorized effects of mindfulness skills on the overall learning environment (Roeser, 2016), a secondary aim was to explore whether the bMBI was effective in improving teachers' classroom climate. We hypothesized that randomization into the program would result in acquisition of both general and teaching-specific mindfulness skills, and that this skill acquisition would function as the primary mechanism of change contributing to positive intervention outcomes. Overall, results of the randomized waitlist-control trial suggest that (a) the bMBI was effective in reducing symptoms of stress and burnout but ineffective in improving well-being or classroom climate; (b) the bMBI was feasible and implemented with fidelity, though important nuances exist with regard to intervention acceptability, demand, and practicality, which may have influenced the impact of the bMBI on teacher outcomes; and (c) although the program's small to medium effect on teachers' acquisition of mindfulness skills indicates that this is one mechanism responsible for significant reductions in teacher stress and burnout, other mechanisms not examined in the current study are likely at play, and these are discussed below.

4.1 Intervention Outcomes

As predicted, analysis of preliminary intervention outcomes confirmed our hypotheses regarding reductions in self-reported stress and symptoms of burnout (see Table 6). Teachers in the intervention group reported significant reductions in self-reported stress and symptoms of burnout, respectively, and program effect sizes on these outcomes were large to very large. This is consistent with both the broader literature base documenting the effectiveness of MBIs on stress reduction in nonclinical populations (Chiesa & Serretti, 2009; Khoury, Sharma, Rush, & Fournier, 2015) and, more specifically, with past MBI studies for teachers reporting significant reductions in stress (Beshai et al., 2016; Taylor et al., 2016; Roeser et al., 2013). However, our program's effect size on stress exceeds the effect sizes observed in these and other (Benn et al., 2012; Ancona & Mendelson, 2014) studies implementing MBIs for teachers. Additionally, our study's effect size on symptoms of burnout also exceeds those observed in previous teacher-focused MBI studies measuring symptoms of burnout that did (Roeser et al., 2013; Jennings et al., 2013) and did not (Frank, Reibel, Broderick, Cantrell, & Metz, 2015) account for intervention feasibility; an additional study (Flook et al., 2013) that did not measure intervention feasibility also reported significant reductions in symptoms of burnout but did not report on within-group effect sizes.

Multiple reasons may underlie the large effect sizes observed in our study. First, our bMBI included substantially fewer direct contact hours than these previous studies reporting significant reductions in stress and/or burnout. While a recent meta-analysis of teacher-focused MBIs reported that little guidance exists for the optimal composition of MBIs for teachers, it was acknowledged that the substantial time commitment required

by many of these previous interventions, several of which include full-day workshops and weekend commitments, may be unfeasible for teachers (Klingbeil & Renshaw, 2018). Although our findings foremost demonstrate that bMBIs for teachers have potential to reduce symptoms of stress and burnout, they also suggest that high amounts of direct contact hours may not necessarily translate to more substantial reductions in these symptoms for this population. When considering teachers' extensive time demands, the effectiveness of our bMBI may have been strengthened by balancing effective skill delivery with context-sensitive implementation by not imposing extraneous time demands on teachers that could be perceived as burdensome, stressful, or superfluous. Second, although only two previous teacher-focused MBI studies that accounted for intervention feasibility involved exclusively secondary school teachers (Beshai et al., 2016; Harris et al., 2015), and only Beshai et al. (2015) directly measured and reported significant reductions in teacher stress, some research suggests that secondary school teachers experience more stress than teachers employed in elementary settings (Otero-López et al., 2010; Farber, 1984; de Anda et al., 1997). Thus, secondary school teachers like those in the current study, who may experience relatively higher symptoms of stress than other teachers, might stand to benefit more from MBIs for alleviating this stress.

Regarding additional primary outcomes, contrary to our hypotheses, teachers in the intervention group reported no significant increases in overall well-being and the program's effect on well-being was small. This non-significant finding and small effect size is inconsistent with previous MBIs accounting for intervention feasibility that reported significant increases in either aspects of well-being (i.e., positive affect) or measures of overall well-being with moderate to large effects (Beshai et al., 2016; Harris

et al., 2015). Improvements in classroom climate from pre- to post-intervention in the intervention group were also non-significant; however, results yielded a small effect indicating slight improvements in classroom climate for the intervention group from pre- to post-measurement, which is consistent with limited meta-analytic findings on this outcome (Klingbeil & Renshaw, 2018). Although the waitlist-control group experienced significant and large positive effects of classroom climate from pre- to post-measurement, they had substantially poorer classroom climate at baseline; regardless of this large effect, the waitlist-control group's reported levels of classroom climate remained less positive at post-intervention compared to the intervention group. In general, findings regarding classroom climate should be interpreted with caution given the moderate internal consistency of the measure used to assess this construct, and with one subscale (Personalization) excluded from analyses due to an unacceptable level of internal consistency. Overall, results from this investigation do not suggest that the bMBI was associated with significant effects on either teacher well-being or classroom climate.

4.2 Intervention Feasibility

Several past studies and reviews have made recommendations for optimizing and improving the feasibility of MBIs for teachers (Ancona & Mendelson, 2014; Roeser et al., 2013; Hwang et al., 2017; Lomas et al., 2017; Emerson et al., 2017; Klingbeil & Renshaw, 2018). The primary purpose of the current study was to design and implement a teacher-focused bMBI that was specifically informed by these prior recommendations. Extensive efforts were made by the program developers/facilitators throughout the program design and implementation phases in order to maximize intervention acceptability, practicality, and demand.

To ensure that the intervention was highly acceptable, the program developers/facilitators consulted with school administration during the intervention design phase in order to promote context-sensitive implementation; and the bMBI curriculum was developed specifically for use with teachers and focused on the development of self-regulatory skills. As expected, participants indicated on the feasibility questionnaire that the intervention was highly acceptable with regard to applicability to their personal and professional lives, helpfulness of program content (i.e., general usefulness, gaining confidence in effectively managing stress), level of personal comfort engaging in program activities during session, group size, and overall satisfaction with their participation. This strong level of acceptability is consistent with other studies that accounted for intervention feasibility (Benn et al., 2012; Jennings et al., 2011, 2013; Beshai et al., 2016; Harris et al., 2016; Roeser et al., 2013; Ancona & Mendelson, 2014; Reiser et al., 2016, Taylor et al., 2016) and provides additional evidence that MBIs are an acceptable form of intervention for teachers.

The qualitative data largely corroborated this high level of acceptability, as a major theme within these data was participants' positive feedback about the overall program, usefulness of program content, and their participation. Notably, the feasibility questionnaire item assessing how comfortable participants felt engaging in exercises during session had a larger standard deviation than most other feasibility items; participants also had an overall neutral rating of how difficult they found it was to apply program strategies/techniques outside of session. These factors may have contributed to the non-significant findings regarding teachers' overall well-being and classroom climate, as acquisition, generalized application, and utilization of those strategies and skills

learned in session is a critical component of both our intervention model and more general logic models explaining the theorized effects of mindfulness for teachers (Roeser et al., 2012; Shapiro, et al., 2016). Although no previous teacher-focused MBI studies have accounted for these aspects (i.e., level of comfort engaging in exercises during session, difficulty applying strategies/techniques outside of session) via feasibility measurement, it appears that our participants' neutral ratings of their difficulty regarding outside-of-session skill application is not singular to this study, as qualitative data reported by Ancona and Mendelson (2014) suggests that some participants in their study had difficulty applying skills outside of session due to time constraints. Nevertheless, this, as well as participants' level of comfort during program sessions, are important aspects to consider when designing and implementing MBIs for teachers. In particular, these preliminary data may indicate that future teacher-focused MBIs should have a specific, perhaps exaggerated, emphasis on both supportive group climate and identifying relevant occasions where teachers can deliberately practice and apply mindfulness skills.

Given the substantial time commitment required by many of the previous MBIs for teachers, the current study's bMBI design as a whole was informed by the need for a more practical intervention strategy better tailored to meet the unique needs of teachers. Program facilitators took an additional measure in order to ensure intervention practicality by soliciting participants availability prior to scheduling each individual program session. As anticipated given our brief intervention design, data suggest that participants found the bMBI highly practical. Participants agreed on the feasibility questionnaire that the frequency and duration of the program was appropriate. Objective measures of practicality (i.e., program retention, program completion rate, attendance)

are consistent with these ratings as only one participant dropped out of the study, the majority of participants attended all sessions, and all participants who did not drop out of the study met the *a priori* attendance rate goal. These findings are comparable to past studies that also reported on these measures of practicality (Ancona & Mendelson, 2014; Benn et al., 2012; Roeser et al., 2013), though, importantly, our program completion rate is higher than these past studies despite our implementation of stricter program criterion due to the brevity of the bMBI.

Similar to only one prior feasibility study (Ancona & Mendelson, 2014), we employed an additional qualitative assessment of practicality that yielded important supplemental data informing how to improve the practicality of MBIs for teachers. Data derived from this qualitative assessment, in tandem with additional objective data (i.e., program retention, program completion rate, attendance), suggests that we alleviated some of the barriers to intervention practicality in prior investigations, and these augmentations may have contributed to the program's large to very large effects on teacher stress and burnout. Yet, despite these extensive improvements, these data also indicate that additional modifications are necessary in order for MBIs to be practically integrated and implemented within the context of teachers' competing time demands. In particular, a major theme in our qualitative data was significant time constraints, as several participants cited scheduling difficulties as a major barrier to session attendance. This qualitative feedback is consistent with prior studies documenting teachers' significant time demands (Skaalvik & Skaalvik, 2011, 2015; Shernoff et al., 2011; Emerson et al., 2017). Extensive efforts based on past investigations were made by the program facilitators of the bMBI to mitigate these barriers to intervention feasibility (i.e.,

consulting with school administration prior to intervention implementation, soliciting participants individual availability prior to each program session), yet scheduling difficulties remained.

Interestingly, however, an additional major theme within our qualitative data implicated program dosage, specifically, that multiple participants expressed a desire for more program sessions in order to maximize program effectiveness. Other participants also indicated the need for increased dosage via check-ins or reminders regarding program activities/content in between sessions as opposed to increased direct face-to-face contact. While past investigations have called for the development of briefer MBIs for teachers (Ancona & Mendelson, 2014), it is also recognized that little is known about how to balance maximizing intervention practicality with impact, or how to effectively adapt these interventions for teacher use (Klingbeil & Renshaw, 2018). While our data suggests that teachers in our study found the bMBI practical, and the bMBI was effective in reducing stress and burnout, our quantitative and qualitative data in aggregate highlight the importance of delivering these skills to teachers via a medium that is both context-sensitive and feasible, but nonetheless effective.

Program facilitators heeded suggestions of past researchers regarding how to maximize intervention demand (i.e., presented on the program at a school faculty meeting to facilitate recruitment, program facilitators obtained CEC certification for the bMBI through the school district; Ancona & Mendelson, 2014; Jennings et al., 2013; Reiser et al., 2016). However, despite these procedures, notable recruitment difficulties persisted as our sample constituted only 30% of the possible recruitment pool (i.e., total number of school faculty). Issues regarding intervention demand appear prevalent across MBIs for

teachers, as previous studies have reported on either objective recruitment difficulties (Ancona & Mendelson, 2014) or featured small sample sizes (Ancona & Mendelson, 2014; Benn et al., 2012; Jennings et al., 2011; Reiser et al., 2016). While we did not survey teachers for reasons regarding their non-interest, nor did our qualitative data reflect any insight into our recruitment difficulties, we agree with Ancona and Mendelson (2014) in that specific assessment of participants' non-interest would likely yield a better understanding of why some teachers elect not to participate in MBIs. Qualitative feedback from this prior study (Ancona & Mendelson, 2014) indicated that teachers were apprehensive to participate due to the program being held during the afterschool hours, as this interferes with teachers' time to complete school-related tasks. Indeed, the single participant who dropped out of our study cited identical concerns. Although one previous teacher-focused MBI accounting for intervention feasibility implemented briefer program sessions prior to the school day (Harris et al., 2016) as opposed to during the afterschool hours or on weekends, this study reported significantly poorer attendance rates than other studies (i.e., only 32% of participants met the recommended attendance criteria). While it may be helpful to explore the feasibility of implementing MBIs for teachers at various times throughout the day (i.e., lunch, planning periods, etc.), it is likely that similar practicality concerns will arise for program implementation during these times. Thus, a critical next step in this line of research is to identify a time within teachers' schedules where MBIs do not interfere with other important personal or professional demands. It may be ideal for future MBIs to be implemented within true protected time, like teachers' professional development days (i.e., teacher workdays), where teachers are required to be present at school and time is specifically allocated to their own professional development.

The possibility also exists that there may be no single “solution” to these issues of practicality. Thus, researchers must exercise flexibility and demonstrate creativity when delivering these interventions to teachers, while simultaneously preserving adequate fidelity of implementation and maximizing program effectiveness.

An additional barrier to recruitment reported by Ancona and Mendelson (2014) was that some teachers were simply not interested in mindfulness; however, they simultaneously acknowledged that teachers may have been operating under incorrect assumptions about mindfulness. Importantly, we implemented these authors’ recommendations regarding how to minimize this recruitment barrier (e.g., provided specific details and information about the bMBI to all staff at a faculty meeting; consulted with school administration regarding recruitment efforts), yet this did not remedy our recruitment difficulties. A viable next step in understanding these pervasive recruitment difficulties may be to survey all possible participants (i.e., entire faculty bodies) during the intervention recruitment phase in order to assess potential participants’ impressions of mindfulness (i.e., knowledge, attitudes, values, self-efficacy, motivation to engage). These data may help researchers tailor future recruitment strategies to best fit this context and population.

Additional measures of intervention demand include participants’ engagement with intervention content. Only three previous studies have measured or estimated engagement with content outside of session, and these ranged from daily (Benn et al., 2012; Roeser et al., 2013) to weekly (Harris et al., 2016) mindfulness practice over the course of the intervention. We did not ask teachers to report on their frequency/duration of use of program content, but instead reviewed available teacher workbooks at post-

intervention. This review indicated increased engagement over time, though significant room for improved engagement still exists with regard to teachers' completion of in-between notes between each session. This is consistent with qualitative feedback in that increased dosage via check-ins or reminders would likely facilitate improvements in participants' engagement with material outside of session.

A critical finding from this investigation is that teachers' symptoms of stress and burnout were significantly reduced over the course of the intervention. Although improvements in teachers' mindfulness skills from pre- to post-intervention did not reach significance, the program's effect on teachers' general mindfulness and teaching-specific mindfulness skills, respectively, were small to moderate and in the expected directions. Indeed, several previous teacher-focused MBI studies have demonstrated significant increases in mindfulness skills at post-intervention as one of the primary mechanisms of change contributing to achievement of targeted outcomes (Benn et al., 2012; Beshai et al., 2016; Harris et al., 2016; Jennings et al., 2011, 2013; Roeser et al., 2013). Despite the non-significant findings of the current study, it is important to note that the bMBI's effect size on teacher mindfulness was comparable to aggregate effect sizes on mindfulness in a recent meta-analysis of MBIs for teachers (Klingbeil & Renshaw, 2018). These effect size estimates may help explain the non-significant findings on teacher mindfulness and underscores the importance of utilizing effect sizes when working with smaller samples.

The significant decreases in teacher stress and burnout in the absence of large increases in teacher mindfulness may implicate other possible mechanisms of change also at play in MBIs in this context. Past investigations have called for further investigation

into extraneous variables that may have important implications for existing theoretical models of mindfulness for teachers (Ancona & Mendelson, 2014; Hwang et al., 2017; Emerson et al., 2017), as well as inquiry into different pathways altogether contributing to the effectiveness of mindfulness for teachers (Roeser et al., 2013). Specifically, group support has been shown to contribute to decreases in occupational stress (Michie & Williams, 2003) and this variable is likely to have some active role in MBIs (Irving et al., 2014). No previous teacher-focused MBIs have specifically accounted for the possible effects of social support on primary outcome measures. While we also did not actively measure social support, a major theme contained in participants' qualitative feedback implicated group climate. Indeed, one participant explicitly characterized the bMBI sessions as a form of social support (e.g., "I think that part of the effectiveness is sharing/hearing others"). Qualitative data also indicate that interpersonal and contextual variables have, at least at some level, a salient role in the process of the intervention via participants' willingness to share in group, the group size, and the intimacy of the program meeting space. Future investigations should explore what role these (i.e., social support, group climate) and other proposed mechanisms of change (i.e., self-regulatory ability; Roeser et al., 2012; Shapiro et al., 2016) play in MBIs for teachers, as this is a critical next step in designing programs that are effective in reducing teachers' symptoms of stress and burnout, but that can also be replicated and adapted to fit various delivery contexts.

There are two additional considerations of note that might also help explain the statistically non-significant findings on teacher mindfulness. The first pertains to teachers' enhanced understanding of mindfulness and efficacy in exercising mindfulness

skills once beginning participation in the bMBI. Through actively cultivating mindfulness, as is a critical component of the intervention, teachers may have become more aware of the frequency with which they engage in mindfulness and may, in turn, have become increasingly more aware of their own shortcomings in this domain (i.e., when teachers were *not* being mindful when they otherwise thought they were). While the bMBI, regardless, had small to moderate effects on teacher mindfulness, these otherwise non-significant findings may be explained in the context of possibly inflated/inaccurate scores on mindfulness measures at pre-intervention that move in the direction of more accurate self-assessments at post-intervention. The second consideration pertains to the process of mindfulness skill acquisition more generally. Specifically, it is possible that through daily practice of the mindfulness skills developed over the course of the intervention, teachers steadily improve in their mastery and application of mindfulness skills over time. Therefore, given the current study's brief design, some of the potential long-term effects of the intervention remain unexamined. Future studies should include a follow-up assessment to examine sustainability and continued growth in mindfulness beyond the intervention implementation phase.

Fidelity assessment is also critical for understanding the mechanisms of change at play in MBIs for teachers and how to best optimize and adapt these interventions for more widespread use (Sanetti & Kratochwill, 2009). However, despite the growing evidence base for the effectiveness of MBIs for teachers, little to no data exists regarding how to effectively implement these interventions with fidelity (Klingbeil & Renshaw, 2018). The current study addressed these gaps in previous research through implementation of a summative process evaluation to assess for treatment integrity.

These data demonstrate that it is feasible to implement a bMBI with a high degree of fidelity with regards to both dosage and adherence. The summative process evaluation also functioned as a tool to help identify areas of improvement as a means of ensuring continued high quality of delivery during subsequent implementations of the program (e.g., the consistency in which program facilitators model mindfulness skills during program delivery). Future investigations should explicitly account for and measure ongoing fidelity of implementation in order to ensure valid interpretation of intervention outcomes and accurate identification of mechanisms of change.

4.3 Implications and Recommendations for Practice

Consistent with past recommendations, more research is necessary in order to determine how to effectively balance intervention practicality (i.e., dosage) with promotion of positive outcomes, as well as identify the mechanisms of change at play in these interventions. The present study contributed to this cause and preliminary outcomes of our bMBI suggest that briefer adaptations of MBIs for teachers are feasible, able to be implemented with fidelity, and show promise in reducing stress and burnout in teachers. Program design and implementation was informed by recommendations from prior investigations regarding how to optimize the feasibility of MBIs for teachers. We made extensive efforts to optimize intervention acceptability, practicality, and demand at multiple stages of the intervention, beginning with designing a brief and adaptable MBI for teachers. Results from this study have several important implications for optimizing the feasibility of future teacher-focused MBIs.

A major goal of future MBIs for teachers with regards to feasibility should be to design and implement the intervention for teachers in a way that is time- and context-sensitive. Assuredly, our experience in implementing a six-hour, once a month bMBI over the course of four months, available as a form of continuing education during the afterschool hours was positive. Teachers reported that the intervention was acceptable and practical. However, issues regarding intervention demand were evident, and we suggest future programs make a focused and strategic effort in recruiting teachers to participate in the intervention well before program implementation. This should include, to the extent possible, obtaining buy-in from the school's administration (i.e., championing the intervention), presenting school- or district-wide to potential participants, certifying the program as an official form of continuing education (i.e., CECs) or a potential option for teachers to choose from amongst a more comprehensive list of mandatory professional development trainings, and pre-assessment of possible barriers to participation. Additionally, due to their competing time demands, it is unreasonable to expect teachers to volunteer to participate in MBIs in the absence of an incentive or clear explanation regarding what they have to gain from participating. Therefore, a pivotal component of recruiting teachers to participate in MBIs may be to obtain buy-in from school faculty and administration by improving their initial knowledge base around mindfulness, dispelling common misconceptions about the practice, and clearly stating the possible benefits of participating in the program above and beyond simply obtaining a mandatory number of CECs.

Our data also suggest that teachers would benefit from increased communication (i.e., “between class supervision”; Ancona & Mendelson, 2014, p. 166) between program

sessions in the form of a check-in or reminder that prompts teachers to revisit program content/strategies. This may be particularly necessary for MBIs where longer durations elapse between program sessions, similar to the bMBI implemented in this study. The function of this increase in communication is threefold: (1) to fulfill a need for increased dosage facilitating increased engagement with program content outside of session, (2) to avoid simultaneously imposing increased time demands on teachers, and (3) to allow teachers the flexibility and autonomy to engage with more content when their schedule allows. Whereas only two teacher-focused MBIs that accounted for intervention feasibility utilized phone coaching between program sessions (Jennings et al., 2011, 2013), opportunities exist for increased communication via other mediums that may be less time-demanding but serve a similar purpose (e.g., reminder e-mails/prompts to engage in mindfulness practice and/or complete program assignments, text-based group chats with other group members, smartphone applications, etc.). Future studies should explore the utility of these platforms as a means of increasing engagement and communication with teachers between sessions, particularly in those MBIs that require less direct contact time and feature longer durations between program sessions.

A major theme within our qualitative data was recommendations for improvement. It appears that including strategies specific to classroom implementation is an important component of enhancing the acceptability of MBIs for teachers, as this finding has also been reported in previous investigations (Ancona & Mendelson, 2014). The possibility also exists that teachers may be more apt to utilize these mindfulness strategies outside of session if they perceive them to have tangible effects on their students' behavior, social functioning, or academic achievement, as well their overall

classroom climate. Also pertaining to program didactics, researchers should ensure that program content minimizes clinical and/or scientific jargon and maximizes accessibility for teachers (i.e., provide behavioral operationalizations of mindfulness). Lastly, due attention should be paid to the climate of the MBI, including the physical setting of the group (i.e., intimacy of meeting space), interpersonal dynamics among group members, group size, and group members' individual willingness/reluctance to actively participate in discussion. For example, one prior review (Emerson et al., 2017) adeptly noted that some participants may feel as if discussing workplace stressors with colleagues may not be appropriate, especially considering that professional relationships may be a primary source of individuals' occupational stress. These and other climate-related barriers warrant consideration and ongoing monitoring when designing and implementing future MBIs with his population and in this context.

As mentioned previously, future MBIs should include ongoing and/or summative fidelity assessment as a means of drawing accurate conclusions regarding intervention effectiveness and mechanisms of change. The unique demands of teachers necessitate the designing of interventions that fit the specific needs of this population; failing to account for treatment integrity when implementing future teacher-focused MBIs is ultimately providing little guidance as to how interventionists can optimize program feasibility by consolidating content into essential elements and, further, delivering the minimally effective dose.

4.4 Study Strengths, Limitations, and Future Directions

This study features several strengths and limitations that can inform future teacher-focused MBI research. First and foremost, preliminary intervention outcomes are based entirely on self-report and do not include objective measurement (i.e., physiological indicators of stress, third-party systematic observations of classroom climate); though, physiological measurement (i.e., salivary cortisol) was included as an additional component of this intervention and findings, to be reported elsewhere (Taylor, Zarrett, & Roberts, manuscript in preparation), support reductions in stress among this population. Also, our self-report measure of classroom climate (CUCEI) demonstrated notable psychometric concerns and findings derived from this measure should be interpreted with caution. Second, while customary for teacher-focused MBIs, we used convenience sampling and are ultimately unable to rule out selection effects. However, our study employed a mixed-methods randomized wait-list controlled design to offset this methodological limitation and included a summative process evaluation assessing intended dosage and adherence to intervention elements essential for effective treatment delivery. Our study was one of a select few to employ a randomized controlled design while also accounting for intervention feasibility; and only the second teacher-focused MBI to systematically assess intervention fidelity. Third, our sample size was small and likely lacked adequate power; we therefore report on effect sizes in addition to statistical significance. Fourth, our intervention was implemented within the context of a single school and, while unlikely to have had a substantial effect on intervention outcomes, we cannot dismiss possible contamination effects across conditions. Although we included a randomized controlled design, involving active controls and follow-up measurement is a

necessary next step in this line of research; incorporating these elements into future research designs will help determine if the positive effects of MBIs are sustained, or perhaps strengthened, beyond the delivery of intervention, and help delineate the utility of MBIs for teachers compared to other SMIs in the educational context. Furthermore, future research should account for variables that we initially considered to have little applicability to teachers' acquisition of mindfulness skills (i.e., social support, group climate, etc.) in this context. Qualitative findings from our study suggest that these variables may have contributed to preliminary intervention outcomes and future investigations should systematically measure perceived social support and elements of group climate by employing a mixed-methods design.

4.5 Conclusion

The results of this randomized waitlist-control trial provide evidence for the effectiveness of a bMBI in reducing stress and burnout among a sample of secondary school teachers. The program's effect on these key outcomes were large to very large. However, no significant improvements in psychological well-being or classroom climate were noted. The program also had small to moderate, albeit non-significant, effects on teachers' mindfulness skills, indicating that teachers' acquisition of these skills may not have been the only mechanism of change driving the positive changes in these two key outcome variables. Feasibility assessment suggests that the intervention was both highly acceptable and practical. A key direction of future research should involve enhancing the acceptability, practicality, and demand of these interventions as a means of optimizing feasible implementation. However, emphasis on feasibility should be strategically balanced with preserving intervention effectiveness on primary outcomes (i.e., stress,

burnout, well-being), while also continuing to investigate the potential downstream effects of MBIs for teachers on important secondary outcomes (i.e., classroom climate, student outcomes).

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APPENDIX A

INTERVENTION FEASIBILITY QUESTIONNAIRE

1. The goals of this program were communicated to you clearly.

- | | | |
|----------------------|-------------------------------|-------------------|
| a. Strongly disagree | c. Neither agree nor disagree | d. Agree |
| b. Disagree | | e. Strongly agree |

2. Describe the degree of difficulty that you have experienced in implementing the techniques and strategies we covered in the program.

- | | | |
|-------------------|------------|--------------|
| a. Very difficult | c. Neutral | d. Easy |
| b. Difficult | | e. Very easy |

3. The techniques and strategies discussed in the program are applicable in my professional life as an educator.

- | | | |
|----------------------|-------------------------------|-------------------|
| a. Strongly disagree | c. Neither agree nor disagree | d. Agree |
| b. Disagree | | e. Strongly agree |

4. The techniques and strategies discussed in the program are applicable in my personal life.

- | | | |
|----------------------|-------------------------------|-------------------|
| a. Strongly disagree | c. Neither agree nor disagree | d. Agree |
| b. Disagree | | e. Strongly agree |

5. The mindfulness exercises provided in the workbook are useful.

- | | | |
|----------------------|-------------------------------|-------------------|
| a. Strongly disagree | c. Neither agree nor disagree | d. Agree |
| b. Disagree | | e. Strongly agree |

6. The directions for the mindfulness exercises provided in the workbook are easy to follow.

- | | | |
|----------------------|-------------------------------|-------------------|
| a. Strongly disagree | c. Neither agree nor disagree | d. Agree |
| b. Disagree | | e. Strongly agree |

7. I felt comfortable engaging in the exercises/activities and participating the activities during program sessions.

14. Please elaborate on your answer to question 13.
15. Please provide any other thoughts you have about the program.

APPENDIX B
SUMMATIVE PROCESS EVALUATION

DOSAGE

1. To what extent are all intended components of the program provided to program participants?
2. To what extent are all intended components of the program provided to program participants in the expected session (i.e., session 2, etc.)?
3. To what extent is all of the intended content covered in each session?
4. To what extent are all of the intended methods, strategies, and activities covered in each session?

ADHERENCE

1. To what extent does the program adhere to components outlined in initial intervention framework?

PROGRAM SESSION: *DOSAGE*

Program session # __ of 4

DOSE	Yes	No	N/A
A. An overview of session content was reviewed ^I	1	2	—
B. Participants demonstrated knowledge and learning from previous sessions ^K	1	2	—
C. Individual session focus was clearly introduced and explained by session facilitators ^K	1	2	—
D. Program facilitators directed open-ended questions to the group ^I	1	2	—
E. Participants were addressed by name when contributing to discussion ^M	1	2	—
F. Participants were encouraged to apply/relate session content to their personal lives ^{PA}	1	2	—
G. Participants were encouraged to apply/relate session content to their role as an educator ^{EA}	1	2	—
H. Participants identified the benefits of engaging in style of thinking/behaviors promoted in session ^{PA}	1	2	—
I. Participants identified why it is important to value engagement in these styles of thinking/behaviors ^{PA}	1	2	—

J. Participants are encouraged that it is possible to apply these styles of thinking/behaviors to lives ^{PA}	1	2	—
K. Discussion was conducted in a supportive and non-judgmental environment ^M	1	2	—
L. Participants contributed their own ideas relevant to individual session content ^{PA}	1	2	—

PROGRAM SESSION: ADHERENCE

Program session # __ of 4

Clarity of Expectations	None	Some	Most	All	N/A
1. Program facilitators clarify questions (if any) prior to beginning session ^I	1	2	3	4	—
2. Program facilitators revisit group expectations (if needed) ^I	1	2	3	4	—
3. Program facilitators answer participant questions throughout duration of session ^I	1	2	3	4	—
Review of Previous Session Content					
1. Program facilitators review information presented in previous session ^I	1	2	3	4	—
2. Program facilitators solicit participant questions regarding previous session content ^I	1	2	3	4	—
Session Introductory Exercise					
1. Instructions/directions for exercise are clearly described by program facilitators ^K	1	2	3	4	—
2. Program facilitators offer participants opportunity to not engage in exercise if they do not feel comfortable ^M	1	2	3	4	—
3. Participants engage in introductory exercise ^P	1	2	3	4	—
4. Program facilitators describe how exercise is related to specific session content ^I	1	2	3	4	—
5. Exercise teaches participants a self-regulatory skill ^M	1	2	3	4	—
6. Program facilitators encourage participants to respond/react to their experience engaging in exercise ^I	1	2	3	4	—
Didactic Presentation					
1. Program facilitators effectively and clearly introduce specific session topic ^I	1	2	3	4	—
2. Session topic is clearly defined by program facilitators ^I	1	2	3	4	—
3. Program facilitators describe the behavioral operationalization associated with specific session topic ^I	1	2	3	4	—

4. Program facilitators encourage participant questions regarding specific session topic ^I	1	2	3	4	—
5. Participants build on conversation initiated by program instructors or other participants ^P	1	2	3	4	—
6. Program facilitators check for understanding prior to proceeding to next session component ^I	1	2	3	4	—
Session Specific Exercise					
1. Instructions/directions for exercise are clearly described by program facilitators ^K	1	2	3	4	—
2. Program facilitators offer participants opportunity to not engage in exercise if they do not feel comfortable ^M	1	2	3	4	—
3. Participants engage in session-specific exercise ^P	1	2	3	4	—
4. Exercise teaches participants a self-regulatory skill associated with individual session topic ^M	1	2	3	4	—
5. Program facilitators encourage participants to react/respond to session-specific opportunity either verbally or in written format (journal) ^I	1	2	3	4	—
6. Program facilitators clearly explain exercise correlates to individual session topic ^K	1	2	3	4	—
Group Discussion					
1. Program facilitators direct participants to open-ended questions in teacher workbooks and/or contained within presentation ^I	1	2	3	4	—
2. Participants actively engage in discussion with program facilitators and other participants ^P	1	2	3	4	—
3. Program facilitators guide, but do not dominate, group discussion among participants ^M	1	2	3	4	—
4. Open-ended questions prompt participants to identify how information applies to their personal lives ^{PA}	1	2	3	4	—
5. Open-ended questions prompt participants to identify how information applies to their role as an educator ^{EA}	1	2	3	4	—
6. Program facilitators answer participant questions (if any) ^I	1	2	3	4	—
Concluding Exercise					
1. Instructions/directions for exercise are clearly described by program facilitators ^K	1	2	3	4	—
2. Program facilitators offer participants opportunity to not engage if they do not feel comfortable ^M	1	2	3	4	—
3. Participants engage in concluding exercise ^P	1	2	3	4	—
Closing Remarks					
1. Program facilitators direct participants to complete journal entry prior to next session ^I	1	2	3	4	—

2. Program facilitators remind participants to complete “in-between” notes prior to next program session ¹	1	2	3	4	—
3. Program facilitators encourage participants to engage in designated mindfulness activities in workbook appendix in-between program sessions ¹	1	2	3	4	—

Process Evaluation Framework Dimensions

Abbreviation	Framework Dimension	Definition
K	Knowledge	Development of mastery of skills, demonstrating previous learning, clear step-by-step instruction teaching/demonstrating/clarifying skills
P	Participation	Active engagement and participation in activities
PA	Personal Application	Participants afforded opportunities to apply information/activities to their own lives
EA	Educator Application	Participants afforded opportunities to apply information/activities to their role as an educator
M	Modeling	Facilitators model activities and techniques that are typically targeted or utilized when practicing mindfulness (i.e., respect, compassion, receptive attitude, kindness, etc.)
I	Implementation	General program components used to ensure adequate program delivery or session management