PREDICTING MENTAL HEALTH PROVIDER RESPONSE TO BREATHE, A BURNOUT INTERVENTION

by

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To Aubrey, my joy and inspiration

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Within the mental health field, provider burnout is widespread and associated with far-reaching negative outcomes for providers, consumers, and organizations. Over the past four decades, various burnout interventions have been tested and found to be minimally effective, leading several researchers to suggest an increased focus on targeted recruitment (i.e., targeting providers who are most likely to benefit from a particular burnout intervention approach) and/or modifications to the interventions (e.g., format and content). Accordingly, the present study examined several person-related and intervention-related variables that were hypothesized to be predictive of response to BREATHE, a burnout intervention for mental health providers. Data from four prior studies that assessed the effectiveness of the BREATHE intervention were amalgamated. For the primary analyses, hierarchical linear regression was used to determine whether the person-related and/or intervention-related variables were predictive of treatment response. Additionally, the BREATHE studies were examined to determine whether the intervention became less effective at reducing burnout with each subsequent iteration. With respect to person-related predictors of response to the BREATHE intervention, age and turnover intentions were significant. Specifically, younger participants had higher post-intervention levels of depersonalization than older participants (β = -.13, p = .023), and higher baseline intentions to turnover were associated with greater post-intervention

levels of emotional exhaustion (β = .11 p = .041) and depersonalization (β = .12, p = .023). In terms of intervention-related predictors of treatment response, participants who received the BREATHE intervention in a multi-session format had higher post-treatment levels of emotional exhaustion than those who received the BREATHE intervention in a single session format (β = .13, p = .015). Notably, across these primary analyses, baseline levels of burnout (i.e., emotional exhaustion, depersonalization, and personal accomplishment) were consistently the strongest predictors of post-intervention levels of burnout. Lastly, the data suggests that the BREATHE intervention became less effective with subsequent iterations. For example, earlier BREATHE studies had larger effect sizes than more recent studies. Additionally, there was a significant difference between the studies with respect to the change in emotional exhaustion (F(3, 230) = 4.86, p = .001, η^2 = .06), such that participants in the first BREATHE study had a significantly larger reduction in emotional exhaustion than participants in the three subsequent studies. The present study was the first to examine potential predictors of response to the BREATHE intervention. Although the hypotheses were not supported, the implications of these findings are discussed and suggestions for future research directions are provided.

INTRODUCTION

Job burnout is prevalent among mental health providers and is associated with negative outcomes for providers, mental health consumers, and organizations (Morse, Salyers, Rollins, Monroe-DeVita, & Pfahler, 2012). Over the past four decades, researchers have conducted intervention studies in an attempt to mitigate provider burnout, but their efforts have been met with minimal success. Indeed, in a recent meta-analytic review of these studies, an overall intervention effect size of .13 (p = .006; k = 26) was reported, meaning that the burnout interventions had only a small impact on mental health provider burnout (Dreison et al., 2016). Researchers have speculated that targeted recruitment (i.e., recruiting providers who are most likely to benefit from the particular burnout intervention approach) and/or modifications to the interventions (e.g., format and content) may improve effectiveness (Dreison, Salyers, & Sliter, 2015; Rollins et al., 2016). However, potential predictors of provider response to burnout interventions have yet to be examined (Dreison et al., 2015). Historically, small sample sizes, inconsistent reporting, a lack of transparency in the primary intervention studies, and the absence of replication precluded a robust examination of treatment response predictors. Fortunately, data from multiple trials of BREATHE (Burnout Reduction: Enhanced Awareness Tools, Handouts, and Education), a burnout intervention for mental health providers, have recently become available (Rollins et al., 2016; Salyers, 2015; Salyers, Hudson, et al., 2011; Salyers, Szempruch, et al., 2011). This series of studies overcomes the aforementioned barriers and offers a unique opportunity to explore factors that might be predictive of treatment response. Accordingly, the current study utilized this data to

determine whether person-related and/or intervention-related factors were significant predictors of response to the BREATHE intervention.

Defining Burnout

In the mental health literature, job burnout is commonly defined as a chronic form of occupational stress characterized by emotional exhaustion (i.e., feeling fatigued and overextended), depersonalization (i.e., a detached or callous attitude toward consumers), and feelings of reduced personal accomplishment (i.e., less pride in the value of one's work; Maslach, Schaufeli, & Leiter, 2001). This three dimensional conceptualization of burnout can be traced to the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996), which is arguably the most widely used self-report measure of job burnout. Some researchers estimate that over 90% of burnout studies have utilized the MBI (Schaufeli & Enzmann, 1998), and the percentage is even higher in studies with samples of mental health providers (Gilbody et al., 2006; Morse et al., 2012; Paris & Hoge, 2010). In fact, a recent meta-analysis on the effectiveness of burnout interventions for mental health providers found that over 96% of studies measured burnout using the MBI (Dreison et al., 2016). Despite its widespread use, the burnout conceptualization put forth by Maslach et al. (1996) is not without criticism, and there are a number of alternative measures and definitions (see, for example, Demerouti, Bakker, Vardakou, & Kantas, 2003; Kristensen, Borritz, Villadsen, & Christensen, 2005; Pines & Aronson, 1988; Shirom, Melamed, Toker, Berliner, & Shapira, 2005). However, given that the vast majority of burnout studies within the mental health field use the MBI, the present study adopts this three dimensional conceptualization of job burnout.

The Impact of Job Burnout

Job burnout is associated with a number of negative outcomes for mental health providers, consumers, and service organizations (Acker, 2010; Garman, Corrigan, & Morris, 2002; Holmqvist & Jeanneau, 2006; Morse et al., 2012; Salyers et al., 2015). At the provider-level, researchers have consistently found that burnout puts providers at an increased risk for mental and physical health problems, including depression and anxiety, sleep disturbances, poor concentration, neck pain, and cardiovascular disease (Acker, 2010; Melamed, Shirom, Toker, Berliner, & Shapira, 2006; Peterson et al., 2008). Other researchers have reported that burnout is associated with absenteeism (Borritz et al., 2006; Parker & Kulik, 1995) and intentions to quit (Quattrochi-Tubin, Jones, & Breedlove, 1982; Salyers et al., 2015). In turn, provider burnout can adversely affect consumers (Laschinger & Leiter, 2006; Parker & Kulik, 1995). Data from both providers and consumers links burnout with diminished treatment quality, as evidenced by higher self-reported treatment errors, lower self-reported conscientiousness, neglect of job duties, and lower client satisfaction ratings (Garman et al., 2002; Quattrochi-Tubin et al., 1982; Salyers et al., 2015). Additionally, staff burnout is associated with negative attitudes toward consumers as well as a more punitive service approach (e.g., increased use of involuntary hospitalization and seclusion; Happell & Koehn, 2011; Holmqvist & Jeanneau, 2006; Priebe et al., 2004). At the organization-level, burned-out employees can adversely affect the morale of other staff members (Maslach et al., 2001). Moreover, the consequences of job burnout, such as absenteeism, employee turnover, and consumer complaints, have a negative financial impact (Maslach et al., 2001; Smoot & Gonzales, 1995; Waldman, Kelly, Aurora, & Smith, 2004). In one study, expenses associated with

staff turnover comprised more than 5% of the center's overall operating budget (Waldman et al., 2004). Rising healthcare costs and widespread funding cuts already stretch the limited resources of the mental health service sector, which makes the financial impact of job burnout especially concerning (Druss, 2006; Honberg, Diehl, Kimball, Gruttadaro, & Fitzpatrick, 2011; Honberg, Kimball, Diehl, Usher, & Fitzpatrick, 2011).

Given the many challenges encountered by mental health providers (e.g., consumers with persistent and severe mental illness, stringent productivity requirements, etc.), it is unsurprising that burnout is widespread (Gilbody et al., 2006; Morse et al., 2012). Based on surveys, 21% to 67% of the mental health workforce may be experiencing high levels of burnout (Kilfedder, Power, & Wells, 2001; Morse et al., 2012; Oddie & Ousley, 2007; Rohland, 2000; Siebert, 2006; Webster & Hackett, 1999). It is important to note, however, that prevalence studies use MBI normative data to determine scores that constitute low, average, and high burnout, and it is not yet known at what point scores become clinically significant (Maslach et al., 1996; Morse et al., 2012). Nevertheless, available evidence suggests that even low levels of burnout are a risk factor for mental health problems and that higher burnout is associated with an increased incidence of adverse outcomes (Ahola et al., 2005; Morse et al., 2012).

Burnout Interventions

In response to the pervasive, negative consequences of mental health provider burnout, researchers began conducting intervention studies in the 1980s. Over the past 35 years, many interventions have been tested and generally can be classified into one of the following categories: person-directed, organization-directed, or a combined approach.

Person-directed interventions are intended to help providers reduce job burnout by teaching personal coping skills, relaxation techniques, and/or means of increasing social support (Cooper, 1998). These interventions often draw from classic cognitive-behavioral principles (e.g., cognitive restructuring, rational emotive training) or third-generation cognitive-behavioral techniques (e.g., meditation, mindfulness). Commonly, the intervention is presented in a workshop format and is independent of context, meaning that it does not address issues specific to the organization (Schaufeli & Enzmann, 1998). In contrast, organization-directed interventions center on changing aspects of the work environment that spur employee burnout, such as low staff cohesion, poor communication, work overload, lack of autonomy, and inadequate job resources (Schaufeli & Enzmann, 1998). Examples of organization-directed interventions include co-worker support groups, clinical supervision, job redesign, and continuing education. Finally, combined interventions target both the individual and the organization (Awa, Plaumann, & Walter, 2010). A stress management workshop, coupled with external consultation to facilitate organizational change, is an example of this multifaceted intervention approach.

Despite nearly four decades of research aimed at ameliorating mental health provider burnout, researchers have only made limited progress toward this goal (Dreison et al., 2016). In a recent meta-analysis exclusively focused on the effectiveness of burnout interventions for mental health providers, the authors reported an overall intervention effect size of .13 (p = .006; k = 26), meaning that the interventions had a small, positive impact on provider burnout (Dreison et al., 2016). Notably, person-directed interventions (k = 6) were the most effective intervention type, particularly with

respect to targeting emotional exhaustion. Even so, the effect was relatively small (Hedges' g = .38), and a significant amount of variability was unaccounted for (I^2 = 54%). Taken together, these findings suggest that there may be variables that moderate treatment response and could help explain who is best served by burnout interventions and which intervention characteristics are most effective. Indeed, authors of past meta-analyses on burnout and stress management interventions have speculated that this is the case, but due to inconsistent reporting and a lack of transparency in the primary studies, extensive moderator analyses have not been conducted (Dreison et al., 2016; Van der Klink, Blonk, Schene, & Van Dijk, 2001).

To date, researchers have yet to publish an in-depth study of factors that might moderate or predict mental health provider response to burnout interventions. The aforementioned barriers to using a meta-analytic approach, coupled with the fact that many primary studies were grossly underpowered, have stalled this line of research (Dreison et al., 2016). Fortunately, multiple trials of a specific burnout intervention—BREATHE (Burnout Reduction: Enhanced Awareness Tools, Handouts, and Education)—have recently been completed in samples of mental health providers (Patient-Centered Outcomes Research Institute, 2013; Rollins et al., 2016; Salyers, Hudson, et al., 2011; Salyers, Szempruch, et al., 2011). The BREATHE trials overcome a number of limitations that previously precluded a robust examination of response to treatment; namely, the reporting is transparent, constructs were measured consistently across trials, and the overall sample is large. It is rare to find multiple studies on a specific burnout intervention for mental health providers, so this presents a unique opportunity to examine factors that may predict provider treatment response, such as

employee characteristics, baseline turnover intentions, and the intervention format. The literature on these and other potential predictors of treatment response is reviewed below, but first, an overview of the BREATHE intervention is provided.

BREATHE

BREATHE (Burnout Reduction: Enhanced Awareness Tools, Handouts, and Education) is a person-directed intervention specifically geared toward helping mental health providers reduce their level of work-related burnout. The content is presented in a workshop format, using a combination of PowerPoint presentations, real-world examples, group discussions, and experiential exercises (Rollins et al., 2016; Salyers, Hudson, et al., 2011). Prior to teaching the individual burnout prevention strategies, attendees are presented with a conceptual framework of job burnout, which includes helping participants identify personal burnout warning signs, triggers, and patterns. Next, general principles for coping with burnout are covered, such as being present-oriented and taking responsibility for one's own well-being. After the introductory material, participants are guided through a number of relaxation exercises, including deep breathing, imagery, mindfulness, and meditation. Cognitive strategies are taught next, and attendees practice restructuring unhelpful thoughts about work (e.g., "I'm too busy to take care of myself."). Following this, attendees spend time discussing their values (e.g., compassion, honesty, and dependability) and what brings meaning to their work (e.g., making a difference in the lives of those who are homeless). The benefits of daily gratitude exercises are also presented, and participants reflect on what they are grateful for in both their work and personal lives. Ideas for helping participants reclaim their time, such as collaborative documentation and prioritizing, are then delineated. Next, physical strategies for burnout

reduction are presented and practiced. This includes leading participants through desk yoga exercises and a body scan. The importance of a strong social support network and ways of managing workplace conflicts are then discussed. Lastly, ideas for incorporating burnout reduction strategies into one's daily routine are provided. By the end of the workshop, each participant has created a personalized burnout reduction and/or prevention plan.

The content of the BREATHE workshops has been consistent across studies, but the number of sessions has varied. In earlier studies, the training consisted of a full-day workshop (Rollins et al., 2016; Salyers, Hudson, et al., 2011). Based on participant feedback and findings from the first randomized control trial (RCT) of BREATHE, subsequent RCTs offered an initial half-day workshop followed by two or three shorter booster sessions (Patient-Centered Outcomes Research Institute, 2013; Salyers, Szempruch, et al., 2011). With the latter format, participants were able to practice the burnout prevention strategies between sessions and then report back to the group on how it went, which allowed for the celebration of successes and troubleshooting of problems. This may help participants better integrate the burnout prevention and reduction strategies into their daily work routines (Rollins et al., 2016).

Research indicates that BREATHE is a promising intervention for reducing mental health provider burnout. In the BREATHE pilot study and subsequent RCT, participants in the intervention groups had significant reductions in overall burnout levels from pretest to six-week post-test (Hedge's $g = -.29$, $p < .001$; Rollins et al., 2016; Salyers, Hudson, et al., 2011). With respect to the specific dimensions of burnout, studies of the BREATHE intervention have reported significant decreases in emotional

exhaustion and depersonalization, but no significant changes in personal accomplishment (Rollins et al., 2016; Salyers, Hudson, et al., 2011). To elaborate, in the initial BREATHE pilot study, a large effect was found for the change in emotional exhaustion (d = -.65) and a moderate effect was found for the change in depersonalization (d = -.43) at the six-week post-test (Salyers, Hudson, et al., 2011). In the subsequent RCT, the change in emotional exhaustion and depersonalization at the six-week post-test was significant at the p = .01 level (Rollins et al., 2016). There is also limited evidence that the BREATHE intervention continues to have a positive impact on burnout in the long-term. For example, Rollins et al. (2016) found that the reduction in emotional exhaustion was significant at the six-month post-test (p = .05 level). However, changes in the other dimensions of burnout were not significant at this time-point.

It should be noted that when the BREATHE intervention was compared against an active control group (i.e., person-centered treatment planning), no significant differences were found in burnout reduction between the two groups (Rollins et al., 2016). At the same time, however, from pre-test to post-test, the active control group did not experience significant changes in burnout whereas the BREATHE intervention group did (Rollins et al., 2016).

Overall, the BREATHE intervention appears to be effective in reducing some dimensions of provider burnout in both the short- and long-term, but this intervention has yet to demonstrate comparative effectiveness against an active control condition (Rollins et al., 2016; Salyers, Hudson, et al., 2011). There is room for improvement, and researchers have made a number of suggestions for enhancing BREATHE treatment response. One suggestion is to use targeted recruitment. In other words, researchers

and/or employers would focus on recruiting mental health providers who are most likely to benefit from a person-directed burnout intervention (Dreison et al., 2015). Although there are no existing studies in this area, there are several pieces of evidence to support that this may be a promising line of investigation. First, the aforementioned meta-analysis on the effectiveness of burnout interventions for mental health providers found that the average baseline level of burnout in many studies was relatively low (Dreison et al., 2016). Moreover, lower baseline levels of burnout were associated with smaller intervention effects and accounted for more than 50% of the variance (Dreison et al., 2016). In other words, many participants who were receiving burnout interventions were not experiencing problems with burnout, and thus the interventions may have had limited relevance to them.

A second piece of evidence to support the value of targeted recruitment comes from an open-ended satisfaction survey that was sent to participants in the BREATHE pilot study three weeks after their training. This survey had a 79% response rate and revealed differences in perceived intervention benefits and barriers to use of BREATHE techniques (Salyers, Szempruch, et al., 2011). For example, 59% explicitly reported benefits, 20% were not able to find the time to use the strategies, 17% forgot to use the techniques, and 14% cited personal issues as barriers. From this data, it is clear that some individuals found the intervention more beneficial than others, and some individuals were more likely to implement the techniques than others. What remains unclear, and requires a detailed analysis, is whether there are person-related characteristics that would help to predict these different responses.

In addition to targeted recruitment, researchers have also suggested that modifications to the intervention may increase effectiveness. One such modification is whether the content of the intervention is presented in a single session or over multiple sessions. As mentioned previously, the early BREATHE studies offered a full-day workshop and no booster sessions (Rollins et al., 2016; Salyers, Hudson, et al., 2011), whereas later studies offered a half-day workshop followed by several booster sessions (Patient-Centered Outcomes Research Institute, 2013; Salyers, Szempruch, et al., 2011). The results of the latter studies have yet to be published, but studies in other domains have consistently found benefits for spaced over massed learning (Roediger & Pyc, 2012). Lastly, researchers have suggested that augmenting BREATHE by addressing organizational issues that are commonly associated with burnout (e.g., low autonomy, high workload, and poor staff cohesion) may be beneficial (Rollins et al., 2016). To date, only one study has been conducted that examines BREATHE in conjunction with an organization-directed intervention but the results have not yet been published (Salyers, Szempruch, et al., 2011).

Predicting Treatment Response

The present section provides a review of data on potential predictors of treatment response. Specifically, employee characteristics, turnover intentions, session format, and intervention augmentation are discussed.

Employee Characteristics

With the exception of the current study, no prior studies have systematically explored whether employee characteristics predict burnout intervention treatment

response. Moving beyond a specific focus on burnout interventions to the broader literature on job burnout, the majority of studies pertain to the relationship between organizational characteristics (e.g., workload, autonomy, fairness, etc.) and burnout, and there is comparatively little on the relationship between employee characteristics (e.g., demographics, position, etc.) and burnout (Maslach & Leiter, 2008). Of the limited data that does exist, the most robust employee predictor of job burnout is age. Specifically, studies have consistently found that younger employees tend to report higher levels of burnout than older employees (Brewer & Shapard, 2004; Duquette, Kérowc, Sandhu, & Beaudet, 1994; Garrosa, Moreno-Jimenez, Liang, & González, 2008; Schaufeli & Enzmann, 1998). For example, in a meta-analysis of over 10,000 employees, the correlation between age and burnout was -.16 [95% CI = -.21, -.11], indicating a small but significant relationship (Brewer & Shapard, 2004). Another study, which looked at the relationship between socio-demographic variables and job burnout in nurses, found that younger nurses reported significantly higher levels of burnout than nurses over the age of 30 (Garrosa et al., 2008).

There are several possible explanations for the finding that younger employees tend to have higher levels of burnout than older employees, including poor occupational socialization, reality shock, and attrition (i.e., those who are prone to burnout leave their jobs, whereas those who are less prone to burnout stay in their jobs; Schaufeli & Enzmann, 1998). Irrespective of the explanation, given that younger employees are at the highest risk for burnout, researchers have suggested that younger employees may derive more benefit from burnout interventions than older employees (Brewer & Shapard, 2004).

Whether or not an employee has supervisory responsibilities may be another potential predictor of treatment response. To date, however, researchers have not examined this factor. Interestingly, several studies of burnout reduction programs for mental health providers had specific intervention components targeted toward supervisors (e.g., communication workshops, psychoeducation on leadership styles, and supervision skills training), but these studies did not examine whether or not those with supervisory responsibilities benefitted from the interventions (Livni, Crowe, & Gonsalvez, 2012; Scarnera, Bosco, Soleti, & Lancioni, 2009; van Dierendonck, Schaufeli, & Buunk, 1998). Instead, the focus was on whether or not these multi-faceted programs reduced burnout in subordinate employees. Even though these interventions significantly reduced some dimensions of staff burnout, what remains unclear is twofold: (1) which components of the intervention were helpful in addressing employee burnout, and (2) did supervisors benefit from the interventions? Given the key role that supervisors play in supporting supervisees (Green, Miller, & Aarons, 2013; Halbesleben & Buckley, 2004), it is important to begin to understand whether or not burnout intervention programs are addressing the unique pressures and challenges that supervisors face (Rohland, 2000).

The literature on the relationship between other employee characteristics (e.g., race, sex, job tenure, education, and percentage of time providing direct care) and burnout has yet to reveal a clear pattern (Maslach & Leiter, 2008). As such, it is not possible to extrapolate how these characteristics may or may not be predictive of response to burnout interventions.

Turnover Intentions

Researchers have yet to examine whether turnover intentions, which refer to how strongly an employee has considered (or is considering) leaving his/her job, have predictive power with respect to burnout intervention treatment response. There are, however, a number of studies that have examined the relationship between turnover intentions and job burnout (Stalker & Harvey, 2002). As might be expected, turnover intentions have a moderate to strong positive correlation with job burnout (Burke & Richardsen, 2001; Stalker & Harvey, 2002). In a meta-analysis of job burnout, turnover intentions shared 20% of the variance with emotional exhaustion, 12% of the variance with depersonalization, and 6% of the variance with feelings of reduced personal accomplishment (Schaufeli & Enzmann, 1998). Given that turnover is significantly related to job burnout, it may be an important variable to take into account when considering who might benefit most from burnout interventions.

Session Format

To date, there is only one meta-analytic review of burnout interventions for mental health providers (Dreison et al., 2016), and this review did not find a significant relationship between session format (i.e., single versus multiple sessions) and intervention effectiveness (Dreison et al., 2016). However, the analysis was underpowered, and researchers who have studied interventions for other issues (e.g., job stress, medication adherence, smoking cessation) have generally found a positive relationship between the session format and effectiveness (Dolder, Lacro, Leckband, & Jeste, 2003; Guevara, Wolf, Grum, & Clark, 2003; van Wyk & Pillay-Van Wyk, 2010; Zhu et al., 1996). For example, van Wyk and Pillay-Van Wyk (2010) conducted a meta-

analytic review of job stress interventions for health workers and found that participants who received booster sessions were significantly more likely to maintain post-intervention gains than those who did not receive booster sessions. Similarly, other studies have found that multiple intervention sessions are significantly more effective than a single intervention session (Dolder et al., 2003; Guevara et al., 2003; Zhu et al., 1996). These results are consistent with what would be expected based on learning principles. That is, information is better retained when it is learned over an extended period of time (spaced presentation) as compared to a short period of time (massed presentation; Roediger & Pyc, 2012). Although there are concerns that multiple sessions could result in higher dropout rates and/or missed sessions (Rollins et al., 2016), based on the available evidence, it appears that multiple intervention sessions tend to be more effective than a single intervention session.

Intervention Augmentation

As discussed above, researchers have suggested that augmenting BREATHE, a person-directed intervention, with an intervention aimed at addressing organizational issues, may enhance treatment response (Rollins et al., 2016). Indeed, experts have speculated that a combined intervention approach, which targets both the individual and the organization, may be most effective in reducing burnout (Awa et al., 2010; Morse et al., 2012). However, the comprehensiveness of this approach also means that it is the most difficult to implement and, not surprisingly, only two studies of a combined approach to addressing burnout in mental health providers have been published (i.e., Hill, Atnas, Ryan, Ashby, & Winnington, 2010; Hunnicutt & MacMillan, 1983). In these studies, the combined intervention approach did significantly reduce burnout but,

contrary to expectations, the magnitude of the effect sizes was not significantly different from interventions that only targeted the individual (Dreison et al., 2016).

Study Aims

The present study has two primary aims. The first is to explore person-related characteristics that might predict response to the BREATHE intervention. The second aim is to explore intervention-related characteristics that might be predictive of treatment response. In light of recent findings that burnout interventions are only minimally effective in addressing mental health provider burnout, research that examines predictors of treatment response is needed (Dreison et al., 2016; Rollins et al., 2016). Data on predictors of treatment response will potentially enable mental health centers to target their limited resources toward those who are most likely to benefit from a particular intervention and/or modify certain aspects of the intervention to increase effectiveness. Although the present study is focused on BREATHE, the results from this study may provide promising leads for future research on other burnout interventions for mental health providers.

Hypotheses

Based on the limited extant literature pertaining to predictors of treatment response, several tentative hypotheses were made. First, I hypothesized that employee age would be a significant predictor of treatment response to BREATHE, such that younger employees would have a greater reduction in burnout than older employees. This hypothesis is based on data that indicates that younger employees tend to experience higher levels of burnout than older employees (Brewer & Shapard, 2004; Duquette et al.,

1994; Garrosa et al., 2008; Schaufeli & Enzmann, 1998). As such, younger employees may derive more benefit from the BREATHE intervention than those who are older. Second, I hypothesized that participants who reported a higher percentage of time supervising other employees would have a smaller reduction in burnout than those who reported a smaller percentage of time supervising. This is because the content of the BREATHE intervention does not specifically address the unique responsibilities and stressors that supervisors face.

Third, I hypothesized that employees who had stronger baseline intentions to turnover would have greater reductions in burnout than employees who had weaker baseline intentions to turnover (Burke & Richardsen, 2001; Stalker & Harvey, 2002). This hypothesis is predicated on data that has shown significant correlations between turnover intentions and job burnout. Similar to the rationale for the first hypothesis, those who were burned-out (or were at higher risk of burnout) seem more likely to have benefitted from a burnout intervention.

With respect to intervention characteristics, my fourth hypothesis was that employees who received the BREATHE intervention in a multi-session format would have significantly greater reductions in burnout scores than employees who received the BREATHE intervention in a single session format. This hypothesis is based on data that shows a positive correlation between intervention intensity and effectiveness (Dolder et al., 2003; Guevara et al., 2003; van Wyk & Pillay-Van Wyk, 2010; Zhu et al., 1996). Moreover, this hypothesis is consistent with data from the educational literature, which has consistently found that spaced presentation results in better retention than massed presentation (Roediger & Pyc, 2012). For my fifth hypothesis, I hypothesized that the

addition of an organizational intervention would result in greater reductions in burnout scores than receiving the BREATHE intervention in isolation. Although there is limited empirical data to support this hypothesis (Hill et al., 2010; Hunnicutt & MacMillan, 1983), researchers have speculated that a comprehensive approach to burnout (targeting both the individual and the organization) may be most effective (Morse et al., 2012).

METHODS

Study Design and Procedure

The present study used data from prior studies that assessed mental health provider response to the BREATHE intervention. Specifically, data from the BREATHE pilot study (Salyers, Hudson, et al., 2011), BREATHE comparative effectiveness study (Rollins et al., 2016), a second BREATHE comparative effectiveness study (Salyers, 2015), and the BREATHE-OUT study (Salyers, Szempruch, et al., 2011) were merged into a single database for analysis. The use of this data was approved by the Institutional Review Board at Indiana University-Purdue University, Indianapolis (IUPUI). Each of the studies is described in detail below.

BREATHE Pilot Study (Salyers, Hudson, et al., 2011)

The BREATHE pilot study employed an uncontrolled pre-post design. Specifically, participants completed an initial baseline survey at the time of registration, a second baseline survey on the morning of the BREATHE workshop, and a follow-up assessment six weeks after the intervention.

Participants for the BREATHE pilot study were recruited from a Midwestern mental health center that provides comprehensive mental and substance abuse services. At the time when the study was conducted, the mental health center had more than 500 employees, the majority of whom were white (60%) and female (79%). All employees, including administrators, direct-care staff, and support staff, were eligible to participate. Staff were recruited via emails and flyers that provided information about the BREATHE intervention. These recruitment materials contained a website address where participants

could learn more about the study, give informed consent, register for the day-long BREATHE workshop, and complete the first baseline survey. A total of 103 staff registered for the BREATHE workshop, 84 attended the workshop, and 74 completed the initial survey and six-week post-intervention survey. Those who completed the post-intervention survey were sent a $15 gift card. All study procedures were approved by IUPUI's Institutional Review Board.

BREATHE Comparative Effectiveness Study (Rollins et al., 2016)

Participants for the BREATHE comparative effectiveness study were recruited from facilities in three Midwestern cities. These facilities comprised three veteran's affairs (VA) medical centers, a service agency that specializes in housing and support services for individuals who are homeless, and a community mental health agency. All employees, with the exception of those who had more than three hours of burnout training in the past two years, were eligible to participate. Staff were recruited via informational emails, study brochures that were distributed during staff meetings, and with flyers that were placed in staff mailboxes. Stratified (by organization) random sampling was used to assign participants to the BREATHE intervention or active control group (person-centered treatment planning). A total of 77 staff attended the day-long BREATHE workshop, and 57 completed the baseline survey and six-week follow-up survey. All study procedures were approved by IUPUI's Institutional Review Board and the Research and Development Committees at the VA Medical Centers.

Second BREATHE Comparative Effectiveness Study (Salyers, 2015)

Participants for the second BREATHE comparative effectiveness study were recruited from two Midwestern community mental health centers. One center is located in a rural region and has approximately 230 staff. This mental health center provides mental and substance abuse services to over 6,000 people in the surrounding communities. The other mental health center is in an urban location and employs approximately 260 staff who provide mental and substance abuse services to nearly 4,000 people a year. In this study, only direct-care staff were eligible to participate.

Direct-care staff from the two Midwestern mental health centers were informed of the study via email and with flyers that were placed in staff mailboxes and displayed in common areas. Researchers also attended staff meetings in order to distribute recruitment materials, answer questions about the study, and complete the informed consent process with interested staff. Stratified (by organization) random sampling was used to assign participants to either the BREATHE intervention or the active control condition (motivational interviewing training). Participants in the BREATHE intervention group attended an initial half-day BREATHE workshop followed by two BREATHE booster sessions. Each booster session was 2.5 hours; the first session took place four weeks after the initial training, and the second booster session took place eight weeks after the initial training. Of the 91 participants assigned to the BREATHE intervention, 71 completed the baseline survey and one-month follow-up survey. All study procedures were approved by IUPUI's Institutional Review Board.

BREATHE-OUT Study (Salyers, Szempruch, et al., 2011)

The BREATHE-OUT study used an open-trial pre-post research design with a wait-list comparison group. The intervention comprised the BREATHE workshop as well as workgroups to facilitate positive, staff-driven organizational change. Online surveys were completed at baseline and every six months thereafter for a period of two years. Given this design, the length of time between BREATHE workshop completion and the first post-intervention assessment varied across participants.

Participants for the BREATHE-OUT study were recruited from the same Midwestern mental health center that participated in the BREATHE pilot study. Treatment providers, support staff, and supervisors from assertive community treatment or adult outpatient teams were eligible to participate if they had not received more than three hours of burnout prevention training in the past two years. Members of the research team attended morning staff meetings to provide information about the study and encourage participation. Study brochures and information sheets were distributed to staff, and a research assistant followed up with those who expressed interest in participating. A total of 76 staff registered for the BREATHE workshop, 65 attended at least one training session, and 33 completed a baseline and post-intervention survey. Participants received a $10 gift card for each completed survey and a $40 bonus gift card at the end of the study if all surveys were completed. Study procedures were approved by the Institutional Review Board at IUPUI.

Measures

Employee Characteristics

Across the BREATHE studies, data on several demographic and descriptive variables were collected at baseline, and a subset of these were included in the present study. Specifically, participant age (continuous variable), percentage of time spent supervising (continuous variable), race (white/persons of color), sex (male/female), job tenure in current position (in months), education (bachelor's degree or less/graduate degree), and percentage of time providing direct care (continuous variable) were selected as potential predictor variables.

Maslach Burnout Inventory

Burnout was measured at baseline and follow-up with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach et al., 1996), a version of the MBI specific to human service professionals. Respondents use a 7-point Likert scale, which ranges from 0 ("never") to 6 ("every day"), to answer each of the 22-items. The measure yields results for three dimensions of job burnout: emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). Mean scores were calculated for each dimension.

The first dimension, emotional exhaustion, pertains to feeling fatigued and overextended (e.g. "I feel used up at the end of the workday."). The psychometric properties of this subscale are the most robust, with high internal consistency ($\alpha = .90$), as well as demonstrated convergent, predictive, and discriminant validity (Maslach et al., 1996). Test-retest reliability coefficients have ranged from .47 to .82 over a period of two

weeks to one year (Maslach et al., 1996; Piedmont, 1993; Richardsen & Martinussen, 2004). The second dimension, depersonalization, is described as a negative or detached attitude toward consumers (e.g., "I don't really care what happens to some recipients."). This scale has adequate internal consistency (α = .79), and its convergent and discriminant validity are well-established (Maslach et al., 1996). Test-retest reliablity coefficients range from .50 to .72 (Lee & Ashforth, 1993; Leiter, 1990; Maslach et al., 1996). Lastly, personal accomplishment refers to one's sense of work competence (e.g., "I feel I'm positively influencing other people's lives through my work."). The internal consistency (α = .71), test-retest reliability (*r* = .57 to .80), and discriminant validity of this subscale are acceptable (Jackson, Schwab, & Schuler, 1986; Maslach et al., 1996; Richardsen & Martinussen, 2004).

Maslach Burnout Inventory Time of Measurement

The length of time between the conclusion of the BREATHE intervention and the first post-intervention measurement varied acrross the BREATHE studies. Therefore, a "time of measurement" variable was created to capture the length of time between the completion of the BREATHE intervention and the first post-intervention assessment (in weeks).

Turnover Intentions

As is common for this construct, intentions to leave the job were assessed using two singular items (Lambert, Hogan, & Barton, 2001). The first item measures past turnover intentions (i.e., "How often have you seriously considered leaving your job in the past six months?") and is rated on a 6-point Likert scale ranging from 1 ("never") to 6

("several times a week"). The second item assesses future turnover intentions (i.e., "How likely are you to leave your job in the next six months?") and is rated on a 4-point scale ranging from 1 ("not likely at all") to 4 ("very likely"). In the present study, these two items–measured at baseline– were summed to create a single turnover intentions score. Researchers have consistently found that turnover intentions are one of the strongest predictors of actual turnover (Tett & Meyer, 1993).

Intervention Characteristics

Two intervention characteristics were examined in this study. Namely, session format (single session/multi-session) and intervention augmentation (BREATHE only/BREATHE plus an organizational intervention).

Data Analysis

Data analyses were conducted using the Statistical Package for the Social Sciences Version 24 (SPSS 24). First, descriptive statistics were generated for the variables. Continuous variables were examined for outliers, and scores that were more than three standard deviations above or below the mean were winsorized, meaning that the outlying scores were replaced by the remaining lowest and highest values (Dixon & Tukey, 1968). The benefits of this approach are twofold: (1) power is not lost, as would be the case with removing outliers, and (2) extreme values in the dataset are still represented, albeit in attenuated form. Each of the scales (i.e., MBI and turnover intentions) was carefully checked for missing values, and missing values were replaced using mean imputation. The data was also checked to ensure that assumptions of univariate and multivariate normality were not violated. First, univariate distributions

were inspected for evidence of skew. Skew indices with absolute values greater than three, and kurtosis indices with absolute values greater than ten, are considered problematic (Kline, 2011). Additionally, histograms and scatterplots were used to assess whether assumptions of linearity and homoscedasticity were violated (Keith, 2006; Kline, 2011). If there was evidence of significant non-normality, appropriate transformations were applied.

Second, zero-order correlation matrices and alpha coefficients were computed and examined. If any predictor variables were correlated above .80, and were conceptually similar, a composite variable comprising the highly correlated variables was created. This approach reduces the occurrence of multicollinearity (Kline, 2011). The psychometric properties of the scales were also examined. Specifically, Cronbach's alpha was computed for each scale. Consistent with recommendations (Spicer, 2005), no scales with an alpha coefficient of less than .70 were used in the analyses.

Next, two preliminary analyses were completed. The first used ANOVA and chi-squared tests to determine whether the BREATHE studies differed significantly on any of the predictor variables. In the second preliminary analysis, a regression analysis was conducted to determine whether a significant relationship existed between intervention effectiveness and time of measurement. Baseline levels of burnout were entered in step one of the regression models, time of measurement was entered in step two, and post-intervention burnout levels served as the outcome variables. If a significant result was found in any of the preliminary analyses, the relationship was controlled for in the remaining analyses.

After completing the preliminary analyses, several hierarchical linear regression analyses were conducted. The first set of regression analyses examined person-related predictors of response to the BREATHE intervention, and the second set of regression analyses examined intervention-related predictors of response to the BREATHE intervention. In order to avoid the numerous issues inherent to arithmetic difference scores (e.g., low reliability, multicollinearity, and dimensional reduction), the present study predicted residual differences, meaning that baseline levels of the outcome of interest were entered in the first step of the regression equations in order to predict post-intervention levels of burnout (Cronbach & Furby, 1970; Edwards, 2002; Humphreys, 1996; Leeb & Weinberg, 1977; Markus, 1980). Relevant control variables were also entered in the first step of these regression equations. More specifically, intervention-related variables that significantly differed between the studies were entered as control variables in the analyses that examined person-related predictors of job burnout, and person-related variables that differed significantly between the studies were entered as control variables in the analyses that examined intervention-related predictors of job burnout. In a more ideal situation, these differences would be controlled for methodologically, but given the nature of secondary data analysis, it was only possible to control for these differences statistically.

Bearing this in mind, the first hierarchical regression analysis examined person-related predictors of emotional exhaustion. Relevant control variables, along with emotional exhaustion (baseline), were entered in step one. In step two, age, race (white = 0, persons of color = 1), sex (male = 0, female = 1), job tenure, percentage of time spent supervising, education level (bachelor's degree or less = 0, graduate degree = 1),

percentage of time providing direct care, and turnover intentions were entered. The outcome variable was emotional exhaustion at the first post-intervention measurement. The second and third hierarchical regression analyses were similar, except that depersonalization and personal accomplishment were examined instead of emotional exhaustion.

The second set of hierarchical regression analyses examined intervention-related predictors of BREATHE treatment response. In the first of these analyses, relevant control variables, along with emotional exhaustion (baseline), were entered in step one. Session format (single session = 0, multiple sessions = 1) and intervention augmentation (yes = 0, no = 1) were entered in step two. The outcome variable was emotional exhaustion at first post-intervention measurement. The second and third intervention-related regression analyses were similar, except that depersonalization and personal accomplishment replaced emotional exhaustion.

The purpose of the final set of analyses was to assess whether the BREATHE intervention became less effective with each subsequent implementation. Effect sizes, based on the standardized mean difference, were computed for each study. Additionally, ANCOVAs were run to determine whether intervention effectiveness differed significantly between the studies. In these analyses, the study served as the fixed factor, baseline burnout was the covariate, and post-intervention burnout was entered as the dependent variable. Again, this approach was used in favor of arithmetic difference scores.

Power Analysis

To determine whether or not the primary analyses (i.e., hierarchical linear regression) would be sufficiently powered, an a priori power analysis was performed in G*Power 3.1(Faul, Erdfelder, Lang, & Buchner, 2007). For the power analysis, alpha was set to .05, power was set to .80, and the maximum number of possible predictors (i.e., 11) was assumed. Based on this, a sample of 123 participants is required to detect a medium effect, a sample of 196 is needed to detect a moderately small effect, and a sample of 850 is necessary to detect a small effect. The present study has a sample of 235, so it is sufficiently powered to detect moderately small effect sizes.

RESULTS

Data Cleaning and Statistical Assumptions

Prior to conducting the preliminary data analyses, the data was cleaned and statistical assumptions were checked. Continuous variables were examined for outliers, and several variables did have scores that fell more than three standard deviations above or below the mean. Specifically, the time of measurement variable had two outlying values (24 weeks and 50 weeks), and these outliers were set to the next lowest value in the distribution (i.e., 20 weeks). The percentage of time participants spent supervising had nine outliers (ranging from 65% to 89%), and these were winsorized to 60%. Job tenure had four outliers (ranging from 327 months to 408 months), which were all set to 264 months. Lastly, the personal accomplishment baseline measure from the MBI had two outlying scores (2.13 and 2.50), and these scores were winsorized to 2.88.

Missing data was minimal, with only 1.3% of demographic/background data missing and 0.4% of scale data missing. In the small number of cases where there was missing scale data, a participant's mean response for a given scale was used in place of missing values. This was only done, however, when a participant answered at least 75% of items on a scale.

Following this, the data was checked to make sure that assumptions of normality, linearity, and homoscedasticity were not violated (Keith, 2006). Distributions were approximately normal, as evidenced by histograms and descriptive statistics. Moreover, none of the variables had skew indices that were greater than 3, or kurtosis indices greater than 10, which further indicates that the distributions were approximately normal and not

problematic (Kline, 2011). Scatterplots between the dependent variables and each of the independent variables revealed linear bivariate relationships, and scatterplots of residuals and predicted values showed that the error variance was fairly evenly spread across levels of the independent variables. Given that the assumptions of normality, linearity, and homoscedasticity did not appear to be violated, no transformations were applied.

Next, a zero-order correlation matrix was produced using Pearson correlations for continuous variables and point-biserial correlations for dichotomous variables (see Table 1). Although a number of the variables were significantly correlated, only one relationship had a correlation coefficient above .80. Specifically, intervention augmentation was strongly correlated with time of measurement (r = -.89), such that participants who received an additional intervention were less likely than participants who did not receive an additional intervention to have a short interval between the conclusion of the BREATHE intervention and the time in which the post-test was administered. However, because intervention augmentation and time of measurement are not conceptually similar, a composite variable was not created.

Lastly, Cronbach's alpha was computed for each scale (see Table 1). These values ranged from .93 (emotional exhaustion at baseline and post-intervention measurement) to .71 (depersonalization at baseline). Given that values of .70 and above are considered adequate, all scales were retained in subsequent analyses (Spicer, 2005).

Descriptive Statistics and Preliminary Analyses

Descriptive statistics for continuous and dichotomous variables are presented in Tables 2 and 3, respectively. Across the four BREATHE studies, the average age of participants was 41.8 years (SD = 12.2), and the majority were White (80.4%), female

(78.3%), and had a graduate degree (53.8%). Participants had been with their respective agencies for an average of 56.8 months (SD = 63.7), and spent an average of 8.5% of their time supervising others (SD = 15.4) and an average of 57.8% of their time providing direct care services (SD = 29.8). Baseline levels of emotional exhaustion and depersonalization were relatively low, and personal accomplishment was relatively high. More specifically, emotional exhaustion (baseline) averaged 2.7 (SD = 1.3), indicating that, on average, participants had feelings of emotional exhaustion less than a few times a month. Depersonalization (baseline) averaged 1.4 (SD = 1.1), which suggests that, on average, participants experienced feelings of depersonalization less than once a month. Personal accomplishment averaged 4.8 (SD = 0.7), which means that on average participants reported having feelings of personal accomplishment more than once per week. In line with the baseline burnout scores, turnover intentions were relatively low. On a five-point scale (with higher values indicating greater intentions to leave one's job), turnover intentions averaged 2.4 (SD = 1.4).

Results from the first preliminary analysis revealed several significant differences between the BREATHE studies. Specifically, the percentage of time spent supervising, the percentage of time providing direct care services, emotional exhaustion (baseline), depersonalization (baseline), personal accomplishment (baseline), education level, session format, and intervention augmentation differed significantly between the studies (see Tables 2 and 3), and post hoc tests were performed to achieve a more nuanced picture of which study (or studies) were driving these differences (see Tables 4 and 5). In terms of supervision, participants in the pilot study reported a significantly higher percentage of time spent supervising than participants in the first comparative

effectiveness study, second comparative effectiveness study, and BREATHE-OUT study (16.1% versus 5.8%, 4.7%, and 5.5% respectively). Regarding direct care services, participants in the first comparative effectiveness study reported spending an average of 78.3% of their time providing direct care services, which was significantly higher than participants in the other three studies (pilot study = 47.4%, second comparative effectiveness study = 58.0%, and BREATHE-OUT study = 43.4%). Concerning baseline levels of burnout, participants in the pilot study had significantly higher baseline levels of emotional exhaustion than participants in the second comparative effectiveness study and BREATHE-OUT study (3.1 versus 2.3 and 2.2, respectively). Similarly, participants in the pilot study had significantly higher baseline levels of depersonalization than participants in the second comparative effectiveness study and BREATHE-OUT study (1.7 versus 1.2 and 1.1, respectively). With respect to the final dimension of burnout, personal accomplishment, participants in the second comparative effectiveness study had significantly higher baseline levels of personal accomplishment than those in the pilot study and BREATHE-OUT study (5.0 versus 4.6 and 4.5, respectively). In regards to education level, the pilot study had a significantly higher percentage of participants with graduate degrees than the second comparative effectiveness study (57.5% versus 40.8%). Additionally, the first comparative effectiveness study had a significantly higher percentage of participants with graduate degrees than the second comparative effectiveness study and the BREATHE-OUT study (73.7% versus 40.8% and 39.4%, respectively). With respect to session format, the pilot study and first comparative effectiveness study, which both had single session workshops, differed significantly from the second comparative effectiveness study and BREATHE-OUT study, which both had

multi-session workshops. Lastly, intervention augmentation differed significantly between the BREATHE-OUT study, which had an additional intervention, and the remaining studies, which did not have any additional interventions.

In a second preliminary analysis, emotional exhaustion (post-intervention) was regressed onto emotional exhaustion (baseline) in step one and time of measurement in step two. Similar analyses were run for depersonalization and personal accomplishment. Irrespective of burnout dimension, after controlling for baseline levels of either emotional exhaustion, depersonalization, or personal accomplishment, time of measurement did not significantly predict post-intervention burnout levels or account for a unique proportion of the variance (see Table 6).

In sum, the results of the preliminary analyses revealed that several person-related and intervention-related predictor variables (i.e., education level, the percentage of time spent supervising, the percentage of time providing direct care services, emotional exhaustion (baseline), depersonalization (baseline), personal accomplishment (baseline), session format, and intervention augmentation) differed significantly between the studies. Thus, in an effort to homogenize the BREATHE studies, these variables were controlled for in the analyses that follow. Time of measurement was not significantly related to the outcome variables, and it was thus excluded from subsequent analyses.

Hierarchical Linear Regression Analyses

Results from the hierarchical linear regression analyses are summarized in the subsections that follow and are also presented in Table 7 (person-related predictor variables) and Table 8 (intervention-related predictor variables).

Person-Related Predictor Variables

In the first hierarchical regression analysis, which examined emotional exhaustion as the outcome, intervention-related control variables (i.e., session format and intervention augmentation), along with baseline emotional exhaustion, were entered in step one. In step two, age, race, sex, job tenure, education level, percentage of time spent supervising, percentage of time providing direct care, and turnover intentions were entered. The variables entered in the first step accounted for a significant proportion of the variance (F_{change} (3, 221) = 93.14, $p < .001$; $\Delta R^2 = .56$). The variables entered in the second step accounted for a much smaller proportion of the variance and only reached trend-level significance (F_{change} (8, 213) = 1.96, $p = .053$; $\Delta R^2 = .03$). Emotional exhaustion at baseline was the strongest predictor of post-intervention levels of emotional exhaustion ($\beta = .70$, $p < .001$), followed by the intervention-related control variable of session format ($\beta = .12$, $p = .030$). Of the person-related predictor variables, only turnover intentions was significant, such that higher baseline intentions to turnover were associated with greater emotional exhaustion at follow-up ($\beta = .11$ $p = .041$).

In the second hierarchical regression analysis, where depersonalization was examined as the outcome, step one accounted for a significant proportion of the variance (F_{change} (3, 221) = 67.82, $p < .001$; $\Delta R^2 = .48$). Step two also accounted for a significant, albeit much smaller, proportion of the variance (F_{change} (8, 213) = 2.27, $p = .024$; $\Delta R^2 = .04$). Depersonalization at baseline was the strongest predictor of post-intervention levels of depersonalization ($\beta = .62$, $p < .001$). With respect to the person-related predictor variables, age was a significant predictor such that younger participants had higher post-intervention levels of depersonalization than older participants ($\beta = -.13$, $p = .023$).

Turnover intentions was also a significant predictor, such that higher baseline intentions to turnover were associated with greater depersonalization at follow-up (β = .12, p = .023).

Lastly, when personal accomplishment served as the outcome, the first step of the regression equation accounted for a significant proportion of the variance (F_{change} (3, 221) = 76.62, $p < .001$; $\Delta R^2 = .51$), whereas the second step did not (F_{change} (8, 213) = 0.46, p = .885; $\Delta R^2 = .01$). Only personal accomplishment at baseline significantly predicted post-intervention levels of personal accomplishment (β = .68, $p < .001$).

Intervention-Related Predictor Variables

In the first of the hierarchical regression analyses for intervention-related predictors, emotional exhaustion was examined as the outcome, person-related control variables (i.e., baseline depersonalization, baseline personal accomplishment, education level, percentage of time supervising, and percentage of time providing direct care services) and baseline emotional exhaustion were entered in step one, and session format and intervention augmentation were entered in step two. The variables entered in step one accounted for a significant proportion of the variance (F_{change} (6, 221) = 47.92, $p < .001$; $\Delta R^2 = .57$). The variables entered in step two also accounted for a significant, albeit much smaller, proportion of the variance (F_{change} (2, 219) = 3.37, p = .036; $\Delta R^2 = .01$). Emotional exhaustion at baseline was the strongest predictor of post-intervention levels of emotional exhaustion (β = .68, $p < .001$). In terms of intervention-related variables, only session format was significant, such that those in the multiple session format had higher post-treatment levels of emotional exhaustion than those in the single session format (β = .13, p = .015).

In the second hierarchical regression analysis, depersonalization served as the outcome. Person-related control variables (i.e., baseline emotional exhaustion, baseline personal accomplishment, education level, percentage of time supervising, and percentage of time providing direct care services) and depersonalization at baseline were entered in step one, and session format and intervention augmentation were entered in step two. The variables in step one accounted for a significant proportion of the variance (F_{change} (6, 221) = 39.78, $p < .001$; $\Delta R^2 = .52$), whereas the variables in step two did not (F_{change} (2, 219) = 0.13, $p = .875$; $\Delta R^2 = .00$). Baseline level of depersonalization was the strongest predictor of post-intervention level of depersonalization ($\beta = .58$, $p < .001$), and baseline emotional exhaustion was also a significant predictor of post-intervention level of depersonalization ($\beta = .17$, $p = .005$).

In the final hierarchical regression analysis, personal accomplishment was examined as the outcome. Person-related control variables (i.e., baseline emotional exhaustion, baseline depersonalization, education level, percentage of time supervising, and percentage of time providing direct care services) and personal accomplishment at baseline were entered in step one, and session format and intervention augmentation were entered in step two. The first step accounted for a significant proportion of the variance (F_{change} (6, 221) = 40.26, $p < .001$; $\Delta R^2 = .52$), and the second step did not (F_{change} (2, 219) = 0.83, $p = .439$; $\Delta R^2 = .00$). Personal accomplishment at baseline was the only significant predictor of post-intervention levels of personal accomplishment ($\beta = .67$, $p < .001$).

BREATHE Intervention Effectiveness over Time

BREATHE study effect sizes (standardized mean difference) were examined to determine whether there was evidence that the intervention became less effective with each successive implementation. Effect sizes were computed such that larger (positive) values indicate greater intervention effectiveness. Table 9 provides the effect sizes for each study, and Figures 1, 2, and 3 present forest plots of study effect sizes for emotional exhaustion, depersonalization, and personal accomplishment. With respect to emotional exhaustion, the BREATHE pilot study had the largest effect size (d = .81), followed by the first comparative effectiveness study (d = .26), BREATHE-OUT study (d = .05), and second comparative effectiveness study (d = .02). In regards to depersonalization, the first comparative effectiveness study had the largest effect size (d = .41), followed by the pilot study (d = .23), BREATHE-OUT study (d = .13), and second comparative effectiveness study (d = .12). Lastly, concerning personal accomplishment, the first comparative effectiveness study had the most positive treatment effect (d = .13), followed by the pilot study (d = .02), BREATHE-OUT study (d = -.06), and second comparative effectiveness study (d = -.10).

ANCOVA was used to ascertain whether intervention effectiveness differed significantly between the studies. Regarding emotional exhaustion, the analysis did reveal a significant difference between the studies ($F(3, 230) = 4.86$, $p = .001$, $\eta^2 = .06$). To determine which specific studies differed significantly, a post hoc analysis was undertaken. The results of this analysis are presented in Table 10 and show that participants in the pilot study had a significantly larger reduction in emotional exhaustion than participants in the first comparative effectiveness study, second comparative

effectiveness study, and the BREATHE-OUT study. Intervention effectiveness did not differ significantly between the studies when examining depersonalization ($F(3, 230) = 0.13$, $p = .944$, $\eta^2 = .00$) or personal accomplishment ($F(3, 230) = 0.96$, $p = .411$, $\eta^2 = .01$).

DISCUSSION

The primary purpose of the present study was to explore factors that might predict response to the BREATHE intervention. In particular, person-related variables (i.e., age, race, sex, job tenure, education level, percentage of time spent supervising, percentage of time providing direct care, and turnover intentions) and intervention-related variables (i.e., session format and intervention augmentation) were analyzed as potential predictors of treatment response. Additionally, the data was examined to determine whether or not the effectiveness of the BREATHE intervention changed with each successive implementation. The results of these analyses are discussed below, with a particular focus on contextualizing the findings, highlighting study limitations, reviewing the implications, and providing suggestions for future research.

Predicting Response to the BREATHE Intervention

Overall, the present study's hypotheses were not supported. With respect to person-related predictors of response to the BREATHE intervention, most of the variables, including race, sex, job tenure, education level, percentage of time spent supervising, and percentage of time providing direct care, were non-significant. It may be that these variables simply do not predict response to the BREATHE intervention, but it is also possible that the present study was not sufficiently powered to detect the effects of these person-related variables. The latter circumstance seems particularly likely considering that the current study was unable to detect small effects, which are par for the course within the burnout literature—especially with respect to person-related predictors

of job burnout as well as burnout intervention effectiveness (Brewer & Shapard, 2004; Dreison et al., 2016; Maslach & Leiter, 2008).

Age and turnover intentions did significantly predict post-intervention burnout levels (after controlling for baseline burnout levels), but neither of these relationships was in the hypothesized direction. To elaborate, it was hypothesized that those at highest risk of burnout would be most likely to benefit from a burnout intervention, and previous research has consistently shown that younger persons and persons with stronger turnover intentions are at a greater risk of burnout than persons who are older or who self-report weaker turnover intentions (Brewer & Shapard, 2004; Burke & Richardsen, 2001; Duquette et al., 1994; Garrosa et al., 2008; Schaufeli & Enzmann, 1998; Stalker & Harvey, 2002). However, in the present study, persons who were younger had higher post-intervention levels of depersonalization than those who were older, and those who reported stronger intentions to turnover had greater post-intervention levels of emotional exhaustion and depersonalization than those who reported weaker turnover intentions. Thus, one possible interpretation of these findings is that the BREATHE intervention is more effective for persons who are older and for persons with weaker baseline turnover intentions. Alternatively, it may be that age and turnover intentions predict changes in burnout regardless of the treatment. That is, the strength of the BREATHE intervention may not have been sufficient to disrupt the positive relationships between age and job burnout or turnover intentions and job burnout (Brewer & Shapard, 2004; Burke & Richardsen, 2001; Duquette et al., 1994; Garrosa et al., 2008; Schaufeli & Enzmann, 1998; Stalker & Harvey, 2002). Unfortunately, the design of the present study is such that

neither possibility can be dismissed, but suggestions for future directions to help clarify this issue are provided in the final section of the manuscript.

With respect to intervention-related variables, session format was a significant predictor, although the relationship was in the opposite direction of what was hypothesized. That is, participants in the multi-session format had higher post-intervention levels of emotional exhaustion (after controlling for baseline levels of emotional exhaustion) than participants in the single session format, suggesting that the single session BREATHE format is more effective than the multi-session format. This runs counter to previous studies, which have generally found that multi-session intervention formats are more effective than single session formats (Dolder et al., 2003; Guevara et al., 2003; van Wyk & Pillay-Van Wyk, 2010; Zhu et al., 1996), and that knowledge is better retained when it is presented over an extended period of time versus a shorter period of time (Roediger & Pyc, 2012). One explanation for this unexpected finding is that participants who received BREATHE in the single session format were exposed to all of the intervention content, whereas some participants who received BREATHE in the multi-session format missed content due to a failure to attend all sessions. Across the multi-session BREATHE intervention groups, participants attended an average of 88.9% of sessions (SD = 18.6%). The majority of these participants (70.2%) attended all sessions, 24% attended between 66.7% and 75% of sessions, and 5.8% attended 50% or fewer sessions. Thus, it is conceivable that the missed content contributed to the multi-session BREATHE format proving less effective than the single session format. To further explore this, the percentage of sessions attended was examined as a predictor of treatment outcome for those who received BREATHE in the multi-

session intervention format. The percentage of sessions attended was not a significant predictor for any of the three burnout dimensions, which casts doubt on the possibility that missing some of the BREATHE content resulted in the multi-session format being less effective than the single session format. Another possibility is that the multi-session format may be perceived by some providers as more burdensome than the single session format. This may be particularly true for mental health providers who are feeling strain related to work overload and thus experience difficulty finding time to attend multiple intervention sessions spaced over a period of months (Morse et al., 2012). A third possible explanation for the unexpected results relates to a study confound. That is, the earlier BREATHE studies used a single session intervention format, whereas the more recent BREATHE studies used a multi-session intervention format. Moreover, the earlier BREATHE studies had larger intervention effect sizes than the more recent BREATHE studies. As will be discussed in detail later, these differences in effect sizes may be due to factors other than session format, such as voltage drop (Chambers, Glasgow, & Stange, 2013).

The second intervention-related variable, intervention augmentation, was a non-significant predictor of treatment response. Thus, the hypothesis was not supported suggesting that augmenting BREATHE with an organizational intervention did not enhance treatment outcomes. Interestingly, although experts have continuously speculated that a comprehensive intervention approach is most effective at reducing job burnout (Awa et al., 2010; Dyrbye et al., 2017; Morse et al., 2012), studies on job burnout interventions for mental health providers have consistently failed to show that a combined intervention approach is more effective than a purely person-directed or purely

organization-directed approach (Carson et al., 1999; Dreison et al., 2016; Hill et al., 2010; Hunnicutt & MacMillan, 1983; Livni et al., 2012; Melchior et al., 1996). Therefore, while the results of the present study are congruent with past research on job burnout in mental health providers, it remains challenging to reconcile this data with expert opinion. Several possibilities for why comprehensive interventions have not proven more effective in reducing job burnout include methodological shortcomings (Gilbody et al., 2006; Morse et al., 2012), high rates of attrition (Dreison et al., 2016), poor implementation (Melchior et al., 1996), a failure to tailor interventions to the needs of employees (Carson et al., 1999), and significant organizational changes during the time of the interventions (e.g., budget cuts and layoffs; Dreison et al., 2016).

Looking specifically at BREATHE-OUT (Salyers, Szempruch, et al., 2011), the only study in the present analysis that augmented BREATHE with an additional intervention, it appears that methodological shortcomings, such as a small sample (n = 33) and low power, played a role in the null findings. Additionally, the organizational component of the BREATHE-OUT intervention, which comprised workgroups to facilitate staff-driven organizational change, may not have had enough potency. To elaborate, only a small number of employees were invited to participate in the workgroups, with the goal being that workgroup participants would initiate changes in the workplace that would benefit other staff. Although there was a positive ripple effect across the organization, with many new initiatives successfully implemented, only those in the workgroup experienced an extra layer of social support and enhanced communication with leadership, factors that are associated with lower burnout (Maslach, 1998; Schaufeli & Enzmann, 1998; Westermann, Kozak, Harling, & Nienhaus, 2014).

Indeed, a preliminary analysis of the BREATHE-OUT data suggests that workgroup members had greater reductions in job burnout relative to employees who did not have the opportunity to participate in the workgroups (Dreison & Salyers, 2017). Although more research is needed, it appears that augmenting the BREATHE intervention with workgroups may be helpful in reducing job burnout, but only for those who directly participate in the workgroup meetings.

Of final note, across both the person-related and intervention-related analyses aimed at predicting response to the BREATHE intervention, baseline burnout was consistently the strongest predictor of post-intervention burnout levels. To elaborate, higher baseline levels of burnout were associated with higher post-intervention levels of burnout and accounted for 48% to 55% of the variance in the regression equations. Consequently, the robust relationship between baseline and post-intervention burnout may be overshadowing other relationships, making it more difficult to detect significant person-related and intervention-related predictors of treatment response.

Intervention Effectiveness over Time

The final set of analyses were undertaken in order to determine whether or not the BREATHE intervention became less effective with each subsequent implementation. Across the three dimensions of burnout, a pattern was found where the earlier studies (i.e., pilot study and first comparative effectiveness study) had larger effect sizes than the more recent studies (i.e., second comparative effectiveness study and BREATHE-OUT study). However, these differences in effectiveness were only significant with respect to emotional exhaustion. Specifically, participants in the pilot study had a significantly

larger decrease in emotional exhaustion than participants in the first comparative effectiveness study, second comparative effectiveness study, and BREATHE-OUT study.

This general pattern, where the effectiveness of the BREATHE intervention declined with subsequent implementations, is similar to the phenomenon of "voltage drop," in which interventions become less effective as they move from initial trials in research settings to later trials in community-based settings (Chambers et al., 2013). Although the BREATHE intervention was always implemented in community-based settings, several factors that contribute to voltage drop may still be applicable. For example, one factor believed to contribute to voltage drop is program drift, in which the intervention deviates from the manualized protocol over time (Harvey & Gumport, 2015). It is possible that earlier implementations of the BREATHE intervention more closely followed the program materials than later implementations. Relatedly, there may be effects due to the specific trainer, with some trainers following the BREATHE materials more closely or presenting the materials in a more compelling manner. As part of the BREATHE-OUT study, the researchers are currently creating a fidelity assessment, which will be crucial for detecting program drift and trainer effects in future studies of the BREATHE intervention (Salyers, Szempruch, et al., 2011). Additional factors thought to result in voltage drop include a lack of fit between the intervention and the setting as well as a failure to customize the intervention to the specific population (Harvey & Gumport, 2015; Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007). Although the BREATHE intervention was originally created for mental health providers in community-based settings, each community mental health center likely faces its own unique challenges that contribute to employee burnout (Schaufeli & Enzmann, 1998).

Moreover, the challenges faced by community mental health centers may change over time. Therefore, continual development, evaluation, and refinement of the BREATHE intervention based on ongoing communication and collaboration with various stakeholders may help optimize the intervention over time and counter the effects of voltage drop (Chambers et al., 2013).

Limitations

The present study has several limitations that are important to acknowledge. First, as is the case with all secondary data analyses, it was only possible to examine variables that were measured in the prior studies. Consequently, there may be variables that are strong predictors of response to the BREATHE intervention (e.g., personality characteristics such as neuroticism and conscientiousness; de Vibe et al., 2015; Dreison et al., 2015; Maslach & Leiter, 2008), but these were not measured and thus could not be analyzed in the current study. A second limitation relates to the sample differences and inconsistencies that were found across the BREATHE studies. For instance, the BREATHE samples differed significantly in terms of average education level, percentage of time providing direct care services, and baseline levels of burnout. Statistical controls were used to help account for these differences, but in a more ideal situation, differences would be minimized through methodological controls. Third, neither person-related nor intervention-related variables were controlled methodologically (a priori). Instead, the present study attempted to control for these variables statistically (post hoc). In a more ideal situation, person-related predictors would be examined by designing a study where the intervention was held constant or vice versa (i.e., the intervention would be examined by designing a study where the participants were similar). A fourth limitation is that the

present study did not include a no-treatment comparison group, so changes in burnout cannot be confidently attributed to the intervention. Lastly, the study was underpowered in terms of detecting small effects. This is problematic for two reasons. First, the effect sizes of burnout treatment response predictors are likely to be small, so it is possible that some significant relationships were missed (Brewer & Shapard, 2004; Maslach & Leiter, 2008). Second, several of the significant findings in the present study had small effects, which raises the concern that these findings may simply be the result of chance, as opposed to true effects.

Implications and Future Directions

In conclusion, the present study was the first to explore potential predictors of BREATHE treatment response. Although the hypotheses were not supported, the findings do have several important implications and can help inform future research directions. First, participants who were older and participants with weaker baseline turnover intentions had lower levels of post-intervention burnout than those who were younger and those with stronger baseline turnover intentions. As mentioned briefly above, with the present study design it is not possible to determine whether these participants respond best to the BREATHE intervention or whether these groups would have lower post-intervention burnout levels regardless of the intervention. Therefore, BREATHE intervention studies with no-treatment control groups are needed. No-treatment control groups would allow for an examination of interaction effects (i.e., age by intervention and turnover intentions by intervention) and definitively answer the question of whether or not the BREATHE intervention works better for persons who are older or who have weaker baseline turnover intentions.

A second major, albeit unexpected, finding was that participants who received BREATHE in a multi-session intervention format had higher post-intervention levels of burnout than those who received the intervention in a single session format. This finding, which suggests that the single session BREATHE format is more effective than the multi-session format, is contrary to much of the extant literature (Dolder et al., 2003; Guevara et al., 2003; Roediger & Pyc, 2012; van Wyk & Pillay-Van Wyk, 2010; Zhu et al., 1996). Accordingly, the present finding should be treated with caution until future studies replicate these results and rule out confounding factors, such as program drift and inadequate intervention customization (Chambers et al., 2013; Harvey & Gumport, 2015; Kilbourne et al., 2007).

A third important outcome from the present study was discovering that the majority of the person-related variables, as well as the intervention augmentation variable, did not significantly predict treatment response. Although it may be the case that these variables possess no predictive power with respect to treatment response, insufficient power to detect small effect sizes is another possible reason for these null findings. Therefore, future studies with larger sample sizes are needed. Amalgamating preexisting studies, as was done in the present analysis, is one way to try to overcome this problem but a number of methodological issues often arise as a result (e.g., different times of measurement across studies, inconsistent use of measures, the inability to examine variables that were not included in the original studies, etc.). Therefore, large-scale, multi-institutional collaborations will be critical for advancing this line of research (Dyrbye et al., 2017).

Lastly, research examining other potential predictors of burnout intervention treatment response is needed. For example, two potentially promising person-related predictor variables, which were not examined in the present study, are neuroticism and conscientiousness. Previous studies on mindfulness interventions for stress reduction have consistently found that neuroticism and conscientiousness moderate treatment response, such that those high in these characteristics derive the most benefit from the mindfulness interventions (de Vibe et al., 2015; Giluk, 2009; Lane, Seskevich, & Pieper, 2007; Shapiro, Brown, Thoresen, & Plante, 2011). Thus, it would be interesting to determine if these characteristics are also predictive of burnout intervention treatment response in samples of mental health providers. In sum, although limited progress has been made in ameliorating mental health provider burnout, given the prevalence and consequences of this issue (Acker, 2010; Garman et al., 2002; Holmqvist & Jeanneau, 2006; Morse et al., 2012; Salyers et al., 2015), it is vital that researchers continue to work to make advances in this area.

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TABLES

Table 1

Correlations between the Variables

Variable	1	2	3	4	5	6
1. Age (years)	(NA)					
2. Race	.04	(NA)				
3. Sex	-.18**	.02	(NA)			
4. Education	.11	-.10	.01	(NA)		
5. Tenure (months)	.46***	-.07	-.30***	.01	(NA)	
6. % of time supervising	.06	-.09	.00	.16*	.27***	(NA)
7. % time direct care	.04	.04	-.08	-.01	-.18**	-.52***
8. EE (baseline)	-.06	-.04	.09	.00	.04	-.03
9. DP (baseline)	-.16*	-.08	-.02	.09	.10	.02
10. PA (baseline)	.11	-.12	-.05	.11	.00	.02
11. EE (post)	-.08	.01	.01	.00	-.03	-.13*
12. DP (post)	-.23***	.00	.01	-.03	-.02	-.07
13. PA (post)	.12	-.11	-.07	.13*	.06	.05
14. Turnover intentions	.00	.05	.03	-.08	.01	-.10
15. Session format	-.10	-.07	-.03	-.24***	-.01	-.21***
16. Intervention aug.	.08	-.09	-.04	.11	.05	.08
17. Time of measurement	-.09	.10	.05	-.10	-.07	-.08

Notes. Cronbach's alphas, when applicable, are on the diagonal.
EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. Intervention aug. = Intervention augmentation.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. (Two-tailed)

Table 1 (continued)

Correlations between the Variables

Variable	7	8	9	10	11	12
1. Age (years)						
2. Race						
3. Sex						
4. Education						
5. Tenure (months)						
6. % of time supervising						
7. % time direct care	(NA)					
8. EE (baseline)	.09	(.93)				
9. DP (baseline)	.03	.61***	(.71)			
10. PA (baseline)	.25***	-.21**	-.20**	(.77)		
11. EE (post)	.16*	.74***	.49***	-.16*	(.93)	
12. DP (post)	.06	.54***	.69***	-.24***	.64***	(.73)
13. PA (post)	.19**	-.24***	-.18**	.71***	-.29***	-.27***
14. Turnover intentions	.04	.58***	.37***	-.22***	.52***	.36***
15. Session format	-.14*	-.27***	-.23***	.05	-.10	-.16*
16. Intervention aug.	.20**	.16*	.14*	.15*	.09	.11
17. Time of measurement	-.14*	-.05	-.07	-.17**	-.04	-.04

Notes. Cronbach's alphas, when applicable, are on the diagonal.
EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. Intervention aug. = Intervention augmentation.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. (Two-tailed)

Table 1 (Continued)

Correlations between the Variables

Variable	13	14	15	16	17
1. Age (years)					
2. Race					
3. Sex					
4. Education					
5. Tenure (months)					
6. % of time supervising					
7. % time direct care					
8. EE (baseline)					
9. DP (baseline)					
10. PA (baseline)					
11. EE (post)					
12. DP (post)					
13. PA (post)	(.78)				
14. Turnover intentions	-.20**	(.73)			
15. Session format	-.01	-.04	(NA)		
16. Intervention aug.	.16*	-.03	-.45***	(NA)	
17. Time of measurement	-.14*	.01	.23***	-.89***	(NA)

Notes. Cronbach's alphas, when applicable, are on the diagonal.
EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. Intervention aug. = Intervention augmentation.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. (Two-tailed)

Table 2

Comparison of Continuous Variables across Studies

Variable	Pilot Study			First Comparative Effectiveness			Second Comparative Effectiveness			BREATHE-OUT			Total Sample			Significance (2-tailed)	
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	F-test	*p*
Age (years)	72	41.4	11.6	57	44.8	11.7	71	40.8	12.2	32	39.4	14.1	232	41.8	12.2	1.72	.164
Tenure (months)	73	60.9	67.5	56	52.9	56.1	71	59.2	68.7	33	48.9	57.8	233	56.8	63.7	0.37	.775
% of time supervising	70	16.1	19.8	57	5.8	10.4	71	4.7	12.0	33	5.5	13.8	231	8.5	15.4	8.85	.001
% time direct care	70	47.7	32.4	57	78.3	23.1	69	58.0	24.4	33	43.4	26.4	229	57.8	29.8	17.21	.001
EE (baseline)	74	3.1	1.2	57	2.9	1.4	71	2.3	1.3	33	2.2	1.2	235	2.7	1.3	6.96	.001
DP (baseline)	74	1.7	1.2	57	1.6	1.2	71	1.2	0.9	33	1.1	1.0	235	1.4	1.1	4.52	.004
PA (baseline)	74	4.6	0.8	57	4.9	0.7	71	5.0	0.7	33	4.5	0.8	235	4.8	0.7	4.83	.003
Turnover intentions	74	1.9	1.1	57	2.0	1.3	71	1.8	0.9	33	2.0	1.1	235	2.4	1.4	0.38	.770

Notes. EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment.

Table 3

Comparison of Dichotomous Variables across Studies

Variable	Pilot Study		First Comparative Effectiveness		Second Comparative Effectiveness		BREATHE-OUT		Total Sample		Sig. (2-tailed)	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%	χ^2	*p*
Race												
White	58	81.7%	42	73.7%	62	88.6%	23	71.9%	185	80.4%	6.16	.104
Persons of Color	13	18.3%	15	26.3%	8	11.4%	9	28.1%	45	19.6%		
Sex												
Male	10	13.5%	17	29.8%	18	25.4%	6	18.2%	51	21.7%	5.93	.115
Female	64	86.5%	40	70.2%	53	74.5%	27	81.8%	184	78.3%		
Education												
Bachelors or less	31	42.5%	15	26.3%	42	59.2%	20	60.6%	108	46.2%	17.03	.001
Graduate degree	42	57.5%	42	73.7%	29	40.8%	13	39.4%	126	53.8%		
Session format												
Single	74	100%	57	100%	0	0%	0	0%	131	55.7%	235.0	.001
Multi	0	0%	0	0%	71	100%	33	100%	104	44.3%		
Intervention aug.												
Yes	0	0%	0	0%	0	0%	33	100%	33	14.0%	235.0	.001
No	74	100%	57	100%	71	100%	0	0%	202	86.0%		

Note. Intervention aug. = intervention augmentation.

Table 4

Post Hoc Tests for Differences on Continuous Variables across Studies

Variable	Study (I)	Study (J)	Mean Difference (I-J)	*SE*	*p*
Percentage of time supervising	Pilot Study	First Comparative Effectiveness	10.3	2.6	.001
		Second Comparative Effectiveness	11.4	2.5	.001
		BREATHE-OUT	10.6	3.1	.005
	First Comparative Effectiveness	Second Comparative Effectiveness	1.1	2.6	1.000
		BREATHE-OUT	0.3	3.2	1.000
	Second Comparative Effectiveness	BREATHE-OUT	-0.8	3.1	1.000
Percentage of time providing direct care	Pilot Study	First Comparative Effectiveness	-30.6	4.8	.001
		Second Comparative Effectiveness	-10.3	4.6	.160
		BREATHE-OUT	4.4	5.7	1.000
	First Comparative Effectiveness	Second Comparative Effectiveness	20.3	4.8	.001
		BREATHE-OUT	34.9	5.9	.001
	Second Comparative Effectiveness	BREATHE-OUT	14.6	5.7	.069
Emotional Exhaustion (baseline)	Pilot Study	First Comparative Effectiveness	0.3	0.2	1.000
		Second Comparative Effectiveness	0.8	0.2	.001
		BREATHE-OUT	1.0	0.3	.002

Table 4 (Continued)

Post Hoc Tests for Differences on Continuous Variables across Studies

Variable	Study (I)	Study (J)	Mean Difference (I-J)	*SE*	*p*
Emotional Exhaustion (baseline)	First Comparative Effectiveness	Second Comparative Effectiveness	0.6	0.2	.156
		BREATHE-OUT	0.7	0.3	.100
	Second Comparative Effectiveness	BREATHE-OUT	0.2	0.3	1.000
Depersonalization (baseline)	Pilot Study	First Comparative Effectiveness	0.1	0.2	1.000
		Second Comparative Effectiveness	0.5	0.2	.036
		BREATHE-OUT	0.6	0.2	.038
	First Comparative Effectiveness	Second Comparative Effectiveness	0.4	0.2	.127
		BREATHE-OUT	0.6	0.2	.097
	Second Comparative Effectiveness	BREATHE-OUT	0.1	0.2	1.000
Personal Accomplishment (baseline)	Pilot Study	First Comparative Effectiveness	-0.3	0.1	.231
		Second Comparative Effectiveness	-0.3	0.1	.029
		BREATHE-OUT	0.1	0.2	1.000
	First Comparative Effectiveness	Second Comparative Effectiveness	-0.1	0.1	1.000
		BREATHE-OUT	0.4	0.2	.081
	Second Comparative Effectiveness	BREATHE-OUT	0.5	0.2	.014

Table 5

Post Hoc Tests for Differences on Dichotomous Variables across Studies

Variable	Study (I)	Study (J)	Significant Difference*
Education	Pilot Study	First Comparative Effectiveness	No
		Second Comparative Effectiveness	Yes
		BREATHE-OUT	No
	First Comparative Effectiveness	Second Comparative Effectiveness	Yes
		BREATHE-OUT	Yes
	Second Comparative Effectiveness	BREATHE-OUT	No
Session format	Pilot Study	First Comparative Effectiveness	No
		Second Comparative Effectiveness	Yes
		BREATHE-OUT	Yes
	First Comparative Effectiveness	Second Comparative Effectiveness	Yes
		BREATHE-OUT	Yes
	Second Comparative Effectiveness	BREATHE-OUT	No

* "Yes" indicates differences are significant at $p \leq .05$

Table 5 (Continued)

Post Hoc Tests for Differences on Dichotomous Variables across Studies

Variable	Study (I)	Study (J)	Significant Difference*
Intervention augmentation	Pilot Study	First Comparative Effectiveness	No
		Second Comparative Effectiveness	No
		BREATHE-OUT	Yes
	First Comparative Effectiveness	Second Comparative Effectiveness	No
		BREATHE-OUT	Yes
	Second Comparative Effectiveness	BREATHE-OUT	Yes

* "Yes" indicates differences are significant at $p \leq .05$

Table 6

Time of Measurement as a Predictor of Intervention Effectiveness

Step	Model	β	ΔR^2	ΔF
Outcome: Emotional Exhaustion (post-intervention)				
1	Emotional Exhaustion (baseline)	.74***	.55	280.79***
2	Time of measurement	.00	.00	.01
Outcome: Depersonalization (post-intervention)				
1	Depersonalization (baseline)	.69***	.48	214.38***
2	Time of measurement	.00	.00	.00
Outcome: Personal Accomplishment (post-intervention)				
1	Personal Accomplishment (baseline)	.71***	.51	239.28***
2	Time of measurement	-.02	.00	.14

*** $p < .001$ (Two-tailed)

Table 7

Regression Analyses for Person-Related Predictor Variables

Step	Model	β *(p)*	ΔR^2	ΔF *(p)*
Outcome: Emotional Exhaustion (post-intervention)				
1	Emotional Exhaustion (baseline)	.70 (.001)	.56	93.14 (.001)
	Session format	.12 (.030)		
	Intervention augmentation	.02 (.717)		
2	Age	-.03 (.541)	.03	1.96 (.053)
	Race	.04 (.417)		
	Sex	-.07 (.152)		
	Job tenure	-.04 (.422)		
	Education level	.05 (.312)		
	Percentage of time supervising	-.03 (.644)		
	Percent time direct care	.08 (.142)		
	Turnover intentions	.11 (.041)		
Outcome: Depersonalization (post-intervention)				
1	Depersonalization (baseline)	.62 (.001)	.48	67.82 (.001)
	Session format	-.04 (.554)		
	Intervention augmentation	.03 (.532)		
2	Age	-.13 (.023)	.04	2.27 (.024)
	Race	.04 (.406)		
	Sex	-.01 (.915)		
	Job tenure	-.00 (.981)		
	Education level	-.06 (.268)		
	Percentage of time supervising	-.06 (.329)		
	Percent time direct care	-.00 (.966)		
	Turnover intentions	.12 (.023)		
Outcome: Personal Accomplishment (post-intervention)				
1	Personal Accomplishment (baseline)	.68 (.001)	.51	76.62 (.001)
	Session format	-.02 (.744)		
	Intervention augmentation	.02 (.671)		
2	Age	.01 (.824)	.01	0.46 (.885)
	Race	-.02 (.629)		
	Sex	-.01 (.868)		
	Job tenure	.05 (.374)		
	Education level	.04 (.493)		
	Percentage of time supervising	.02 (.710)		
	Percent time direct care	.04 (.574)		
	Turnover intentions	-.04 (.406)		

Note. Beta weights (and associated *p*-values) are reflective of all variables being included in the model.

Table 8

Regression Analyses for Intervention-Related Predictor Variables

Step	Model	β *(p)*	ΔR^2	ΔF *(p)*
Outcome: Emotional Exhaustion (post-intervention)				
1	Emotional Exhaustion (baseline)	.68 (.001)	.57	47.92 (.001)
	Depersonalization (baseline)	.07 (.200)		
	Personal Accomplishment (baseline)	-.02 (.619)		
	Education level	.01 (.841)		
	Percentage of time supervising	-.09 (.117)		
	Percent time direct care	.06 (.270)		
2	Session format	.13 (.015)	.01	3.37 (.036)
	Intervention augmentation	.01 (.871)		
Outcome: Depersonalization (post-intervention)				
1	Depersonalization (baseline)	.58 (.001)	.52	39.78 (.001)
	Emotional Exhaustion (baseline)	.17 (.005)		
	Personal Accomplishment (baseline)	-.09 (.075)		
	Education level	-.06 (.229)		
	Percentage of time supervising	-.05 (.359)		
	Percent time direct care	.03 (.665)		
2	Session format	.01 (.835)	.00	0.13 (.875)
	Intervention augmentation	.03 (.605)		
Outcome: Personal Accomplishment (post-intervention)				
1	Personal Accomplishment (baseline)	.67 (.001)	.52	40.26 (.001)
	Emotional Exhaustion (baseline)	-.12 (.053)		
	Depersonalization (baseline)	.01 (.823)		
	Education level	.04 (.360)		
	Percentage of time supervising	.06 (.284)		
	Percent time direct care	.07 (.268)		
2	Session format	-.04 (.507)	.00	0.83 (.439)
	Intervention augmentation	.04 (.447)		

Note. Beta weights (and associated *p*-values) are reflective of all variables being included in the model.

Table 9

Effect Sizes by Study and Burnout Dimension

	Standardized Difference in Means (d)		
Study	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Pilot Study	.812	.234	.024
First Comparative Effectiveness Study	.262	.405	.126
Second Comparative Effectiveness Study	.023	.124	-.103
BREATHE-OUT Study	.048	.127	-.061

Note. Studies are listed in chronological order.

Table 10

Post Hoc Tests of Reduction in Emotional Exhaustion by Study

Variable	Study (I)	Study (J)	Mean Difference (I-J)	*SE*	*p*
Emotional Exhaustion	Pilot Study	First Comparative Effectiveness	-0.4	0.1	.005
		Second Comparative Effectiveness	-0.5	0.1	.001
		BREATHE-OUT	-0.4	0.2	.017
	First Comparative Effectiveness	Second Comparative Effectiveness	-0.1	0.2	.620
		BREATHE-OUT	-0.0	0.2	.968
	Second Comparative Effectiveness	BREATHE-OUT	0.1	0.2	.703

FIGURES

Model	Study name	Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	Pilot Study	EE	0.812	0.134	0.018	0.549	1.075	6.057	0.000
	Comparative Effectiveness	EE	0.262	0.135	0.018	-0.002	0.526	1.947	0.052
	Second Comparative Effectiveness	EE	0.023	0.119	0.014	-0.210	0.255	0.190	0.849
	BREATHE-OUT	EE	0.048	0.174	0.030	-0.293	0.390	0.278	0.781
Fixed			0.293	0.068	0.005	0.159	0.426	4.288	0.000
Random			0.289	0.188	0.035	-0.080	0.658	1.537	0.124

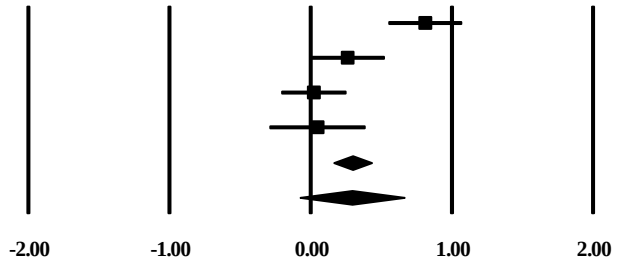

Figure 1. Forest plot of standardized differences in means for emotional exhaustion. Studies are listed in chronological order. Larger, positive effect sizes indicate greater intervention effectiveness.

Model	Study name	Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	Pilot Study	DP	0.234	0.118	0.014	0.003	0.465	1.984	0.047
	Comparative Effectiveness	DP	0.405	0.138	0.019	0.135	0.675	2.942	0.003
	Second Comparative Effectiveness	DP	0.124	0.119	0.014	-0.109	0.358	1.045	0.296
	BREATHE-OUT	DP	0.127	0.175	0.031	-0.215	0.470	0.728	0.467
Fixed			0.224	0.066	0.004	0.095	0.354	3.387	0.001
Random			0.224	0.066	0.004	0.095	0.354	3.387	0.001

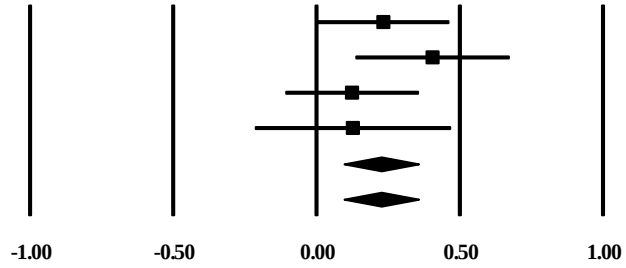

Figure 2. Forest plot of standardized differences in means for depersonalization. Studies are listed in chronological order. Larger, positive effect sizes indicate greater intervention effectiveness.

Model	Study name	Outcome	Statistics for each study						
			Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	Pilot Study	PA	0.024	0.116	0.014	-0.204	0.252	0.206	0.837
	Comparative Effectiveness	PA	0.126	0.133	0.018	-0.134	0.387	0.949	0.343
	Second Comparative Effectiveness	PA	-0.103	0.119	0.014	-0.336	0.130	-0.868	0.386
	BREATHE-OUT	PA	-0.061	0.174	0.030	-0.403	0.280	-0.353	0.724
Fixed			-0.002	0.065	0.004	-0.130	0.126	-0.027	0.979
Random			-0.002	0.065	0.004	-0.130	0.126	-0.027	0.979

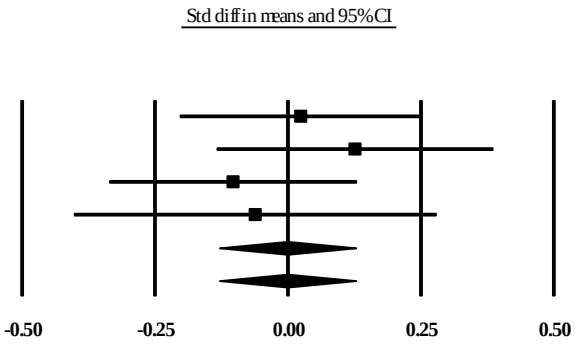

Figure 3. Forest plot of standardized differences in means for personal accomplishment. Studies are listed in chronological order. Larger, positive effect sizes indicate greater intervention effectiveness.

VITA

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EDUCATION

August 2018	Doctor of Philosophy Clinical Psychology, APA Accredited Program Indiana University-Purdue University Indianapolis (IUPUI) Dissertation Title: Predicting Mental Health Provider Response to BREATHE, a Burnout Intervention Program
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CLINICAL EXPERIENCE

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PUBLICATIONS

Dreison, K. C., & Lagges, A. M. (2017). Effectiveness of the Comprehensive Behavioral Intervention for Tics (CBIT) in a pediatric psychiatry clinic: A retrospective chart review. *Clinical Practice in Pediatric Psychology, 5*(2), 180-185.

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PRESENTATIONS

Dreison, K. C., & Lagges, A. M. (2016, November). Effectiveness of the Comprehensive Behavioral Intervention for Tics (CBIT) in a pediatric psychiatry clinic: A retrospective

chart review. Poster presented at the Indiana Psychological Association Fall Conference and Annual Meeting in Indianapolis, IN.

Salyers, M. P., Rollins, A. L., **Dreison, K. C.**, Sliter, M. T., Garabrant, J., Henry, N., Parrish, B., Fukui, S., Freeland, L., Rounds, K., Szempruch, J., & Morse, G. (2016, August). Using appreciative inquiry to address organizational factors in reducing professional burnout. Poster presented at the 23rd NIMH Conference on Mental Health Services Research in Bethesda, MD.

Dreher, K. C., & Salyers, M. P. (2015, May). Job burnout in mental health providers: A meta-analysis of 35 years of intervention research. Paper presented on an interactive panel at the Work, Stress, and Health Conference in Atlanta, GA.

Dreher, K. C., White, D. A., Bauer, S. M., Salyers, M. P., & McGuire, A. B. (2015, February). Burnout in mental health providers: Relative contributions of job demands-resources and autonomy supportive environment. Poster presented at the 18th annual American Association of Behavioral and Social Sciences Conference in Las Vegas, NV.

Bonfils, K. A., **Dreher, K. C.**, Salyers, M. P., & Kukla, M. (2015, February). The multi-faceted nature of social relationships in work success for Veterans with mental illness. Poster presented at the 27th Annual Ethnographic and Qualitative Research Conference in Las Vegas, NV.

INVITED PRESENTATIONS

Dreison, K. C. (2015, November). BREATHE advanced training. Half-day training workshop. Lafayette Case Management Institute in Lafayette, IN.

Dreher, K. C. (2015, June). BREATHE: Strategies for reducing burnout and improving well-being. Half-day training workshop. Lafayette Case Management Institute in Lafayette, IN.

Dreher, K. C. (2015, March). BREATHE: Burnout prevention and work wellness. Full-day training workshop. Transitions of Western Illinois Mental Health Center in Quincy, IL.

Dreher, K. C. (2015, March). BREATHE: Strategies for reducing burnout and improving well-being. Half-day training workshop. Indianapolis Case Management Institute in Indianapolis, IN.

RESEARCH EXPERIENCE

8/2016-8/2017	Dissertation Research Chair: Dr. Michelle Salyers Project: Predicting Mental Health Provider Response to BREATHE, a Burnout Intervention
2/2015-6/2015	Preliminary Examination Research Chair: Dr. Michelle Salyers Project: Job Burnout in Mental Health Providers: A Meta-Analysis of 35 Years of Intervention Research
8/2014-5/2017	Research Assistant ACT Center of Indiana Indianapolis, IN
2/2007-12/2008	Masters Thesis Research Chair: Dr. Gary Bond Project: The IPS-Q: A Measure to Assess Knowledge of the Individual Placement and Support Model
7/2006-4/2009	Research Assistant Adult & Child Mental Health Center Indianapolis, IN

TEACHING EXPERIENCE

Summer 2016	Instructor Psychology B380 (Online), Abnormal Psychology IUPUI Department of Psychology Indianapolis, IN
Spring 2016	Instructor Psychology B310 (Online), Life-Span Development IUPUI Department of Psychology Indianapolis, IN
Spring 2016	Graduate of the Preparing Future Faculty and Professionals Program IUPUI Graduate Office Indianapolis, IN

HONORS AND AWARDS

2017	Elite 50 Best in School Award for the School of Science
2015-2017	Elite 50 Award: Recognizes the top one half of one percent of the graduate and professional student body at IUPUI
2016	Purdue Research Foundation Research Grant, School of Science, IUPUI
2016	Outstanding Scientific Contribution, Third Place, Student Poster Competition, Indiana Psychological Association 2016 Fall Conference, Indianapolis, IN
2015	Graduate-Professional Educational Grant, Graduate and Professional Student Organization, IUPUI
2015	School of Science Graduate Student Council Travel Award, IUPUI
2015	Travel Grant, Department of Psychology, IUPUI
2014	Research Grant, Department of Psychology, IUPUI
2008	Educational Enhancement Grant, Graduate and Professional Student Organization, IUPUI
2006-2007	Graduate Student Fellowship, Department of Psychology, IUPUI
2006	University Fellow Research Funds, IUPUI
2006	Judge Julian Beck Outstanding Graduating Senior Award, California State University Northridge, Northridge, CA
2005-2006	National Institute of Mental Health Career Opportunities in Research Affiliate, California State University Northridge, Northridge, CA
2004-2006	Golden Key Honor Society
2004-2006	Psi-Chi, National Honor Society for Psychology Students
2002-2006	Dean's Honor Roll, California State University Northridge, Northridge, CA

2002-2006	Robert C. Byrd Honors Scholarship, State Department of Education, CA

SERVICE ACTIVITIES AND LEADERSHIP

2016-Present	Ad Hoc Reviewer
2016-2017	Campus Representative, Society for Clinical Psychology (APA Division 12), IUPUI, Indianapolis, IN
2015-2017	Student Board Member, Indiana Psychological Association, Fishers, IN
2015-2016	Clinical Psychology Graduate Student Representative, Psychology Department, IUPUI, Indianapolis, IN
2014-2015	Committee Member, ACT National Conference Planning Committee
2013-2014	Pick Leader, Food Forward, North Hollywood, CA
2013-2014	Volunteer, Monday Night Mission, Los Angeles, CA
2010-2014	Volunteer, Beagle Freedom Project, Valley Village, CA
2007-2008	Mentor, Aftercare for Indiana through Mentoring (AIM), Indianapolis, IN