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Effects of a Mindfulness-Based Leadership Training on Leadership Behaviors and Effectiveness

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ABSTRACT

Objectives: Organizations increasingly integrate mindfulness elements into their leadership development. However, there is limited evidence supporting the efficacy of mindfulness-based leadership training (MBLT) due to a scarcity of intervention studies. . Theoretically, little is known about mediating mechanisms through which MBLT might affect leadership effectiveness. Thus, this research examined whether an MBLT can improve leadership effectiveness and whether leadership behaviors mediated this effect.

Methods: We conducted a quasi-experimental study conducted in a real-world setting with an active control condition. Sixty leaders from various industries participated in either a two-day intensive MBLT workshop followed by three individual coaching sessions over three months, or a presentation skills training with the same structure. Ninety individuals (subordinates, peers, supervisors) provided ratings of leadership behaviors and effectiveness.

Results: Compared to the active control condition, the MBLT led to an increase in leadership effectiveness as well as transformational, authentic, and contingent reward leadership behaviors and a decrease in behaviors that are indicative of avoiding responsibilities and decisions. The former three mediated the intervention's effect on leadership effectiveness in simple mediation analyses. However, in a multiple mediation analysis, only transformational and authentic leadership were significant mediators, suggesting they were the main mediating mechanisms of the effect.

Conclusions: The results provided evidence for the efficacy of an MBLT in enhancing leadership effectiveness through its effects on leadership behaviors. This study contributes to the existing body of knowledge on leadership development, mindful leadership, and mindfulness in the

workplace.

Preregistrations: This study was not preregistered.

Keywords: coaching, mindfulness, mindfulness-based leadership training, leadership behaviors, leadership development, leadership effectiveness, leadership training

Leadership consists in decisions and behaviors that develop a direction (e.g., goals, vision), align efforts towards this direction, and motivate others towards this direction (Day et al, 2014). As such, leadership can be developed through practice. Indeed, organizations across the globe rate leadership development as a top priority, and demand for leadership is growing (Day & Dragoni, 2015). But how can leadership be developed? A growing literature suggests that mindfulness-based leadership training may be one effective approach. For example, research found a variety of benefits of leader mindfulness, such as greater leader well-being, resilience, and creativity (Brendel et al., 2016; Reitz et al., 2020). In addition, leader mindfulness was also positively related to employee outcomes such as employee performance and job satisfaction (Reb et al., 2014).

While these emerging results are promising, they are by no means conclusive (see reviews of Donaldson-Feilder et al., 2019; Urrila, 2021). In particular, the emerging literature has several important limitations. First, most research examined leader trait mindfulness in correlational studies. For example, leader trait mindfulness was positively related to leadership behaviors such as authentic and transformational leadership (Dietl & Reb, 2021; Nübold et al., 2020; Pinck & Sonnentag, 2018). Second, the small body of research using interventions mostly lacked active control conditions (see Brendel et al., 2016, for an exception). These study designs introduce potential confounds, raising concerns about internal validity and causal inference. Third, most of the interventions used, or were closely based on, mindfulness-based interventions developed for other purposes, such as stress reduction (e.g., Reitz et al., 2020). There is a lack of research on interventions designed specifically for leadership development, what we refer to as mindfulness-based leadership training (MBLT).

Additionally, existing research has largely ignored a key construct in the leadership literature: leadership effectiveness, which can be defined as the individual or collective capacity

to set goals and provide direction for action, coordinate efforts, and motivate people to work towards achieving these goals (Day & Dragoni, 2015). Leader effectiveness as an outcome has only been linked to mindfulness theoretically, in observational survey studies and in qualitative studies using leaders as informants (Dietl & Reb, 2021; Lippincott, 2018; Stedham & Skaar, 2019). A small pilot intervention study on a 2-day mindfulness retreat provided inconsistent results (Wasylkiw et al., 2015): Whereas self-ratings of leadership effectiveness increased in the intervention group, the increase was not significantly different from that in a passive control group; moreover, there was no effect of the intervention on other-rated leadership effectiveness. These null results could well have been due to the small sample size of 21 participants.

Importantly from a theoretical perspective, even less is known about potential mediating mechanisms linking MBLT to leadership effectiveness. Here, leadership behaviors may play a key role. Decades of research have shown that what leaders do and the way they do it is crucially important for leadership effectiveness and organizational outcomes (House & Aditya, 1997). The full-range leadership theory (Bass, 1985), a widely used model in leadership research (Toor & Ofori, 2009), differentiates between three broad leadership behaviors: transformational, transactional, and passive-avoidant, with authentic leadership as a notable subsequent addition (Avolio & Gardner, 2005). These leadership behaviors are not seen as mutually exclusive but can be employed alongside each other (Bass, 1985).

In the following section, we theorize how MBLT might increase leadership effectiveness through these four leadership behaviors. We define MBLT as an intervention that incorporates both mindfulness and leadership elements into an integrated leadership development training. We see this approach as similar to existing mindfulness-based interventions such as Mindfulness-Based Cognitive Therapy (MBCT) that integrates mindfulness and cognitive therapy aspects

(Fjorback et al., 2011; Teasdale et al., 1995). We also see our approach to leader mindfulness practice as consistent with Urrila (2021), who defined a leader-specific mindfulness practice as "a holistic leader self-development approach in which a leader engages in raising present-moment awareness of their experience as a leader with the intention to improve the lives of themselves and others" (p. 4). By nature, mindfulness practice focuses on introspection and self-development (Nübold et al., 2020; Urrila, 2021).

Transformational leadership can be defined as a set of leadership behaviors that facilitate a mutually stimulating and inspiring relationship with followers. It comprises the four behavioral dimensions of idealized influence, inspiration, individualized consideration, and intellectual stimulation (Bass, 1985; for a similar, five-dimensional model, see Rafferty & Griffin, 2004). The first three dimensions refer to charismatic, inspiring, and motivating behaviors directed at followers. Intellectual stimulation refers to behaviors that promote innovative thinking and novel problem-solving approaches among followers (Bass & Avolio, 1990).

MBLT may increase transformational leadership by affecting each of these four dimensions. Through cultivating self-awareness and self- and emotion regulation (Vago & Silbersweig, 2012), MBLT may help leaders learn to be more attuned to their subordinates, enabling individualized consideration and idealized influence (Reb et al., 2015). Further, by cultivating curiosity and a beginner's mind (Bergomi et al., 2013), MBLT may train leaders in providing inspiration, intellectual stimulation, and an inspiring, value-based vision for their followers (Pinck & Sonnentag, 2018). Consistent with these arguments, in correlational research employees reported that more mindful leaders treated them more respectfully and experienced better relationships with these leaders (Reb et al., 2019). In addition, Lange et al. (2018) found a positive relationship between leader trait mindfulness and several transformational leadership

facets. Finally, transformational leadership statistically mediated the relationship between leader trait mindfulness and follower positive affect and well-being (Pinck & Sonnentag, 2018).

Contingent reward leadership can be defined as a set of transactional leadership behaviors in which followers comply with leaders' demands in exchange for rewards, such as wages, praise, and prestige, in the form of a give-and-take relationship (Rafferty & Griffin, 2004). Leaders using contingent rewards communicate expectations clearly and provide subsequent rewards contingent upon follower performance (Bass, 1985). The relationship element inherent in contingent reward leadership provides a theoretical link with MBLT, as mindfulness is positively associated with people's ability to form and maintain relationships (e.g., Barnes et al., 2007). Moreover, contingent reward leadership requires leaders to understand their employees' needs so that they can provide satisfying rewards, and it necessitates clear communication of expectations. MBLT can support leaders in developing this understanding and their communication skills by fostering leaders' ability to empathize and perspective-take (Arendt et al., 2019; Block-Lerner et al., 2007). Consistent with the above, Reb et al. (2014) found that employees of more trait-mindful leaders experienced greater rewards in the form of psychological need satisfaction and job satisfaction.

Both laissez-faire leadership and passive management by exception (MBEP) leadership are passive-avoidant leadership behaviors characterized by "the absence of leadership, the avoidance of intervention, or both" (Bass & Avolio, 1990, p.20). Leaders engaging in such leadership behaviors are detached from their followers, avoid interacting with them, and socially distance themselves (Hinkin & Schriesheim, 2008). They neither directly address problems, nor do they attempt to address their followers' needs. Such leaders delay making decisions and do not give feedback or rewards. In addition, passive-avoidant leadership involves a lack of attempts to motivate followers or recognize and try to satisfy their needs (Bass & Avolio, 1990). In contrast,

an MBLT is designed to lead to a greater awareness of the self and others, and to enhance emotion regulation and empathic abilities. Further, MBLT is likely to motivate leaders to approach and support rather than avoid their subordinates, thus reducing passive-avoidant leadership (Barnes et al., 2007; Glomb et al., 2011).

Authentic leadership comprises the four dimensions of self-awareness, relational transparency, an internalized moral perspective, and balanced processing, which respectively refer to understanding oneself, being open and honest with others, leading from personal values, and objectively analyzing information (Caza et al., 2010; Peus et al., 2012). Theoretically, MBLT and authentic leadership are connected in that both emphasize self-awareness (Avolio & Gardner, 2005; Brown & Ryan, 2003). Increased self-awareness of thoughts, emotions, and values developed through participating in an MBLT can foster a greater sense of autonomy in the leader, ultimately resulting in a more unified and self-determined, authentic sense of self (Kay & Young, 2022). Moreover, authentic leaders share their thoughts and emotions openly with their followers and can communicate honestly and in a way that aligns with their self-perception (Gardner et al., 2005). An MBLT can support individuals in developing clarity regarding their values and purpose in life and enable them to act according to their personal beliefs and truth, supporting internalized moral perspective (Carmody et al., 2009; Wenk-Sormaz, 2005). Finally, by reducing negatively biased cognition, mindfulness may enhance balanced processing (Kiken & Shook, 2011).

Empirically, Baron (2016) found a positive relationship between leaders' trait mindfulness and leaders' self-rated authentic leadership, and Nübold et al. (2020) found that a mindfulness intervention for leaders led to increases in follower-rated authentic leadership. Kay and Young (2022) reported that mindfulness training enhanced management students' felt authenticity (i.e., their subjective sense of being authentic, not necessarily in the context of leadership). Finally,

Dietl and Reb (2021) found that a short mindfulness practice (i.e., a 10-minute focused breathing exercise) increased leaders' felt authenticity, and that leader trait mindfulness was positively related to follower-rated authentic leadership.

In meta-analytic research, transformational, authentic, and contingent reward leadership behaviors have been theorized and found to increase leadership effectiveness (DeRue et al., 2011). In contrast, passive-avoidant leadership has been theorized and found to decrease leadership effectiveness (e.g., Judge & Piccolo, 2004). Given the theorizing that MBLT affects these leadership behaviors and that these behaviors, in turn, relate to leadership effectiveness, we hypothesize that MBLT has a positive indirect effect on leadership effectiveness mediated through these leadership behaviors. Thus, taken together, we posit the following hypotheses: MBLT enhances transformational (H1), enhances contingent reward (H2), reduces passive-avoidant (H3), and enhances authentic (H4) leadership behaviors. MBLT enhances leadership effectiveness, as mediated by these leadership behaviors (H5). We used a quasi-experimental study conducted in a real-world setting with an active control condition to test the hypotheses.

Methods

Participants

We recruited participants individually and from organizations using the first author's personal and professional network. The initial participant selection criteria included that leaders have at least 2 years of leadership experience and expressed willingness to invest time and effort into being trained, coached, and measured. The study started with 38 participants in the leadership group and 32 participants in the control group. Due to company restructuring and resignations, eight people left the treatment group, and two left the control group. Hence, the final sample included 60 leaders (45% female) from different organizations and industries in Singapore and

Malaysia, such as logistics (28%), trading (20%), engineering (38%), and professional services (13%). Age was recorded in three categories: below 39 years (51.67%), between 39 and 50 years (35%), and over 50 years (13.33%). Leaders did not differ significantly between treatment and control groups in age, gender, and industry association, all $p > 0.05$.

The final rater sample consisted of 90 raters, including supervisors (37), peers (30; 3 of the 33 previously invited peers declined the invitation), and subordinates (23). Raters for leaders participating through their organization were nominated by the organization's general manager (65; 3 of the 68 invitees declined the invitation due to other personal commitments) and raters for leaders participating individually were invited by the participant (25). Raters provided a total of 205 confidential ratings as they could assess more than one ratee (for example, as supervisor of multiple participants). The sample was 48.39% female, 50.54% were below 39 years old, 33.33% between 40 and 49, and 16.13% over 50 years old. Raters did not differ significantly in age, gender, and industry association, all $p > 0.05$.

Procedure

Leaders were assigned to either an MBLT ($N = 30$) or a presentation skills training ($N = 30$). Of the 60 leaders, 54 were assigned by their general managers (28 mindfulness, 26 presentation). The purposeful allocation of the participants by the general managers to the respective conditions was based on participants' expressed interests. The remaining six participants came from educational institutions and self-selected the condition based on their interests (2 MBLT, 4 presentation skills). While this assignment procedure is non-random, the purposeful selection likely contributes to the relevance of the collected research data, as participants interested in the training they participate in are more likely to be engaged in the intervention process (Patton, 1990).

After completing the sign-up process including a consent form, all leader participants received information about the training dates. The interventions consisted of two parts. First, all leaders participated in a two-day (MBLT or presentation skills) workshop. Second, this was followed by three one-hour-long individual coaching sessions once per month over the next three months. The coaching sessions for both groups involved working with real problems the participants encountered at the workplace related to their respective training, mindfulness-based leadership, or presentation skills. The three-month time frame of the coaching sessions allowed for the development of leadership behaviors and presentation skills in each group, respectively. The same qualified coach trained in mindfulness and presentation skills conducted all workshop and coaching sessions. Data collection from the raters occurred at two separate times: pre-intervention ratings one week before the workshop started and post-intervention ratings one week after the final coaching session, approximately three months and one week later.

The treatment and active control condition were made as similar as possible in all aspects other than content to isolate the effect of the MBLT (Davidson & Kaszniak, 2015). Namely, both trainings were conducted by the same trainer, had the same two-day workshop length, and were followed by three one-hour-long coaching sessions, again with the same trainer. For a detailed summary of the workshop structure and content for both conditions, see the supplementary materials. Note that we decided on a presentation skills training as an active control condition because akin to the MBLT condition, it also involved the development of an important leadership skill (Riggio et al., 2003), and should thus motivate engagement with the training.

MBLT. The MBLT intervention (both workshop and coaching sessions) included two main content areas: mindfulness and leadership. The leadership component was developed based on Avolio and Bass (1990). In the workshop, the participants were introduced to the concepts and

given practical training on transformational, transactional, and authentic leadership behaviors. The mindfulness component was developed based on Kabat-Zinn (1990) and Young (2016). This component of the intervention was designed to adhere to Onken and Shoham's (2014) and Crane's (2017) criteria to ensure fidelity of mindfulness training content and delivery. It encompassed basic mindfulness practices (body scan and breath awareness), guidance on incorporating mindfulness into daily life, emotion regulation strategies, and cultivating positive states of mind through self-awareness. In the individual coaching sessions, the trainer worked with the leaders to apply the concepts related to leadership and mindfulness in their lives. This was done, for example, by the trainer asking the leaders to recall specific incidences when being mindful helped them better manage workplace situations. While the coaching sessions did not include any active mindfulness practice, the trainer encouraged the coachees to develop a daily practice using the mindfulness practices introduced in the workshop. Moreover, the coaching sessions focused on deliberately reflecting on how the leaders could apply mindful approaches to their work.

Active control condition. The presentation skills training workshop first introduced participants to the key elements of an effective presentation. Participants were encouraged to actively participate in class and were given several opportunities to practice the theoretical concepts discussed in the lecture parts of the training. For example, the training included preparing and delivering a 3-minute elevator pitch, followed by feedback and a class discussion. Participants further learned about responding to cold calls, the structure of high-quality pitches, and effective persuasion techniques. The training also included instruction on using kinesics, tonality, and language for persuasion. Finally, participants learned how to use visual tools. The three coaching sessions following the workshop focused on presentation practice.

Measures

Raters completed one survey before and one survey after the training intervention. All scales used a 5-point response format (0=not at all, 4=frequently, if not always), and subscales were averaged as is common. Raters were ensured confidentiality of their responses.

Leadership behaviors. We measured **authentic leadership** via the Authentic Leadership Questionnaire (Walumbwa et al., 2008; sample item: "says exactly what he/she means"), ω_0= 0.96, ω_1= 0.97. We measured the other leadership behaviors with the respective subscales of the Multi-Factor Leadership Questionnaire (MLQ, Avolio & Bass, 2004). A sample item for **transformational leadership** is "specifies the importance of having a strong sense of purpose", ω_0= 0.95, ω_1= 0.96; for **contingent reward leadership**, "provides me with assistance in exchange for their efforts", ω_0= 0.81, ω_1= 0.76; for **MBEP**, "fails to interfere until problems become serious", ω_0= 0.78, ω_1= 0.75; and for **laissez-faire**, "is absent when needed", ω_0= 0.82, ω_1= 0.84). We combined the laissez-faire and MBEP subscales to measure **passive-avoidant leadership**, ω_0= 0.88, ω_1= 0.86 (Avolio et al., 1999; Bono & Judge, 2004). Results from analyzing laissez-faire and MBEP separately are consistent with results for the combined scale.

Leadership effectiveness was measured using the 9-item effectiveness subscale of the MLQ (Avolio & Bass, 2004). This subscale of the MLQ measures leader effectiveness along the three dimensions of ability to instill follower willingness to exert extra effort, leader productivity, and follower satisfaction with the leader. A sample item is "is effective in meeting my job-related needs" (α_0= 0.94, α_1= 0.95).

As **demographic control variables** we included leader and rater gender, leader and rater age (Up to 39 years, between 40-49 years, 50 years and above), and industry (logistics,

trading, engineering services, and professional services).

Data Analysis

Analyses were carried out using STATA version 17. We used Ordinary Least Squares (OLS) regression analysis to predict post-training scores in the training intervention group compared to the active control group. As recommended, we controlled for pre-training scores (Bodner & Bliese, 2018). To statistically account for the nested, two-level nature of our data (i.e., there could be more than one rater per leader), we used clustered standard errors in our analyses (Pornprasertmanit et al., 2014). As we did not use random assignment to conditions, we replicated all findings in robustness analyses including gender, age, and industry as control variables.

We used STATA's SEM command to perform mediation analyses. We estimated a path model, specifying the relationships between the observed variables in the model rather than using latent variables. This was more appropriate in our situation, given that our measures were reliable and valid and the relationships between our study variables were, in principle, well understood (Kline, 2015). We estimated the direct, indirect (i.e., the path through the mediator to the dependent variable), and total effects using a 5,000 bootstrap resampling procedure.

Results

Given the relatively high correlations between transformational leadership, authentic leadership, and leadership effectiveness, we first examined measurement model fit, focusing specifically on these three variables. Confirmatory factor analysis showed acceptable fit for the hypothesized three-factor model $\chi^2 = 143.31$; $p < 0.01$; *RMSEA*= 0.09; *CFI*= 0.97; *TLI* = 0.96; see Kline (2015). Alternate two-factor and one-factor specifications had a significantly worse model fit (see Table 1). Descriptive statistics and correlations among measured variables are presented in Table 2, and pre-and post-training means and standard deviations in each condition in Table 3.

---- Tables 1, 2, and 3 about here ----

MBLT effects on leadership behaviors. Controlling for pre-training scores, post-training ratings in the MBLT condition were significantly higher compared to the active control condition for transformational (*b*= 0.34, *SE*= 0.08, *p*< 0.01), contingent reward (*b*= 0.30, *SE*= 0.10, *p*= 0.01), and authentic leadership (*b*= 0.43, *SE*= 0.10, *p*< 0.01) (see Table 4). These results replicated when including control variables (Table 5). The effects of MBLT replicated for each dimension of transformational and authentic leadership. Post-training ratings of passive-avoidant leadership were significantly lower (*b*= -0.18, *SE*= 0.09, *p*= 0.05) in the MBLT condition. This effect was not statistically significant when including control variables (*b*= -0.15, *SE*= 0.09, *p*= 0.11).

As an additional robustness test we analyzed the within-condition (i.e., pre-post) changes in each training condition (i.e., MBLT and presentation training) separately. In the MBLT condition, as expected, post-training ratings significantly increased from pre-training ratings for transformational (*b*= 0.26, *SE* =0.06, *p*< 0.01), contingent reward (*b*= 0.17, *SE*= 0.06, *p*= 0.01), and authentic leadership behaviors (*b*= 0.26, *SE*= 0.06, *p*< 0.01)*;* they did not change for passive-avoidant leadership (*b*= 0.01, *SE*= 0.07, *p*= 0.89). In contrast, in the active control condition we found no significant differences in pre- vs. post-training ratings for transformational (*b*= 0.00, *SE*= 0.06, *p*= 0.94), contingent reward (*b*= 0.00, *SE*= 0.07, *p*= 1.00), and authentic leadership (*b*= -0.03, *SE*= 0.08, *p*= 0.66). Passive-avoidant leadership increased in the control condition (*b*= 0.20, *SE*= 0.08, *p*= 0.02). In other words, functional leadership behaviors increased in the MBLT condition but remained unchanged in the active control condition. In contrast, passive-avoidant leadership did not change in the MBLT condition but increased in the control condition.

MBLT effects on leadership effectiveness. For leadership effectiveness, controlling for

pre-training scores, post-training ratings were significantly higher in the MBLT condition compared to the active control condition (b= 0.36, SE= 0.09, p< 0.01); see Tables 4 and 5. Again, we analyzed the within-condition changes in each condition separately in robustness tests. As expected, in the MBLT condition, post-training leadership effectiveness were significantly higher from pre-training ratings (b=0.22, SE=0.07, p=0.01). In contrast, in the active control condition, we found no significant differences in pre- vs. post-training ratings (b=-0.04, SE=0.07, p=0.59).

---- Tables 4 and 5 about here ----

Mediation. We first conducted four separate simple mediation analyses for each leadership behavior (Figure 1). Controlling for pre-training ratings, we found that the indirect effect of MBLT on leadership effectiveness through transformational leadership was positive at 0.36 (95% *CI* [0.18, 0.53]); the direct effect of MBLT was 0.07 (95% *CI* [-0.02, 0.15]), and the total effect was 0.43 (95% *CI* [0.24, 0.61]). For contingent reward leadership, the indirect effect was also positive at 0.21 (95% *CI* [0.08, 0.35]); the direct effect was 0.21 (95% *CI* [0.05, 0.37]), and the total effect was 0.42 (95% *CI* [0.21, 0.63]). For passive-avoidant leadership, the indirect effect was positive at 0.05, but not significant (95% *CI* [-0.01, 0.12]); the direct effect was 0.54 (95% *CI* [0.28, 0.80]), and the total effect was 0.60 (95% *CI* [0.35, 0.85]). For authentic leadership, the indirect effect was positive at 0.40 (95% *CI* [0.20, 0.60]); the direct effect was 0.08 (95% *CI* [-0.03, 0.20]), and the total effect was 0.49 (95% *CI* [0.26, 0.71]). These results replicate when controlling for demographics.

Next, we performed a multiple mediation analysis, entering all mediators simultaneously to assess which leadership behaviors were the strongest mediators of the effect of MBLT on leadership effectiveness (Figure 2). The indirect effects through transformational leadership at 0.31 (95% *CI* [0.17, 0.47]) and authentic leadership at 0.17 (95% *CI* [0.08, 0.28]) were

significant. On the other hand, the indirect effects through contingent reward leadership at -0.02 (95% *CI* [-0.07, 0.02]) and passive-avoidant leadership at -0.00 (95% *CI* [-0.02, 0.00]) were not significant. The direct effect of condition was 0.04 (95% *CI* [-0.05, 0.13]), and the total effect was 0.46 (95% *CI* [0.29, 0.63]).

---- Figures 1 and 2 about here ----

Discussion

In light of the importance of effective leadership and the burgeoning interest in the study of mindfulness in organizations (Reb et al., 2020), we examined the efficacy of an MBLT for improving leadership effectiveness. Specifically, in quasi-experimental study conducted in a real-world setting with an active control condition, we tested how MBLT affects leadership effectiveness through several leadership behaviors derived from full-range leadership theory (Bass, 1985): transformational, contingent reward, passive-avoidant, and authentic leadership.

In this regard, our research makes several contributions. First, we advance understanding of the processes and mechanisms underlying changes in leadership effectiveness following participation in an MBLT. Leader-specific mindfulness practice has been defined as an introspective personal development approach focused on raising self-awareness (Urrila, 2021). While the literature has found that leader self-development through introspection is a critical aspect of improving leadership (Cacioppe, 1998; Day et al., 2014), to date, we have little information about how these practices would translate into more effective leadership. The present research deepens our understanding of the leadership development process by showing that a leadership training emphasizing self-awareness and introspective self-development practices can positively affect the effectiveness of leaders when interacting with their followers, peers, and supervisors. Our study, which demonstrated these effects through a three-month training

involving coaching sessions, aligns with recent trends. This trend is moving towards flexible leadership development initiatives. The aim is to promote individual-based, long-term transformation (Boyce et al., 2010).

Second, we extend our understanding of the relationship between MBLT and leadership behaviors in novel directions. Specifically, we showed that an MBLT enhanced leadership behaviors associated with transactional contingent reward leadership. While transactional leadership is perhaps less glamorous than transformational leadership, following Bass (1985), scholars have argued that these two leadership behaviors complete rather than contradict each other and that effective leaders use both. Among transactional leadership behaviors, contingent reward is considered a constructive, functional leadership behavior. For example, Lee et al. (2019, p. 825) argued that both transformational and contingent reward leadership "are characterized by high levels of consideration, fairness, role-modeling behavior, and clear expectations and rewards." The MBLT increased contingent reward leadership behaviors. These behaviors mediated the intervention's effect on leadership effectiveness in a straightforward manner. Yet, contingent reward leadership was not a significant mediator in the multiple mediation analysis, suggesting a less reliable role as a mechanism of the effects of MBLT, relative to transformational leadership.

Further, extending Lange et al. (2018), who reported a negative relationship between leader trait mindfulness and dysfunctional destructive leadership behaviors, we found that MBLT reduced dysfunctional passive-avoidant leadership behaviors relative to the control condition. Taken together, these studies suggest that leader mindfulness reduces both dysfunctional active (e.g., destructive) and passive (e.g., laissez-faire) leadership behaviors. However, when including control variables, i the effect was no longer significant. became non-significant when including

control variables. Moreover, passive-avoidant leadership did not mediate the effect of MBLT on leadership effectiveness, perhaps because of its weaker relation with leadership effectiveness. Thus, further research is warranted.

Finally, we contribute to the workplace and general mindfulness literatures, which have been criticized for relying too heavily on research designs with relatively weak internal validity that preclude confident causal inferences (Davidson & Kaszniak, 2015). For example, Grossman (2011, p. 1034) argued that the self-report measures of mindfulness used in most leader mindfulness research "may serve to denature, distort, and banalize the meaning of mindful awareness in psychological research and may adversely affect further development of mindfulness-based interventions." By conducting a 3-month quasi-experimental study in a real-world setting with an active control condition (rather than a passive control or simple pre-post design) and other ratings of mediating and outcome variables (rather than self-ratings), we respond to calls for more studies with strong causal designs in mindfulness research at the workplace (Good et al., 2016) and in general (Creswell, 2017). As Grant & Wall (2009, p. 655) argued, quasi-experiments offer "many of the benefits of the true field experiment for strengthening causal inference in settings with high external validity". Moreover, by experimentally manipulating the mindfulness intervention treatment, we avoid concerns related to self-report mindfulness scales.

Limitations and Future Directions

As with most studies, ours has limitations. We outline five main limitations we encourage future research to address in subsequent studies. First, participant assignment to the study conditions was non-random, as we allowed participants to self-select into the MBLT or presentation training conditions to increase engagement, which has been found to enhance the

efficacy of interventions (Lyubomirsky et al., 2011; Patton, 1990). This may have led to a selection bias, which may limit the generalizability of the findings to individuals motivated to participate in an MBLT. It may also have introduced confounding variables into the study, making it possible that pre-existing participant differences between the two conditions affected outcomes. However, treatment and control conditions did not differ significantly in gender composition, age, and industry association. Importantly, we controlled for pre-training differences between treatment and control conditions in all our analyses to mitigate potential concerns resulting from the non-random assignment.

Second, as with other mindfulness-based interventions (e.g., mindfulness-based stress reduction, MBSR; Kabat-Zinn, 1990), we used a holistic approach combining mindfulness practice with other training components (leadership training and coaching, in our case, yoga and stress management in the case of MBSR). While beneficial from a training perspective, this approach makes it difficult to identify the specific contribution of each training element to the intervention effects. The third limitation concerns the generalizability of the present findings from a temporal perspective. We only assessed other-rated leader behaviors and effectiveness twice, thus precluding a true longitudinal assessment of changes in our leader participants. IIt is unclear how the effects of the MBLT on leadership behaviors and effectiveness evolve over a longer period. Relatedly, our fourth limitation pertains to our measurement of mediators and outcome variable. We measured the mediators (leadership behaviors) and the outcome variable (leadership effectiveness) at the same time, which precludes drawing strong causal inferences that leadership behaviors caused leadership effectiveness. To address the issue, one could manipulate the mediator (Imai, Tingley, & Yamamoto, 2013; Pirlott & MacKinnon, 2016). However, as we were mainly concerned with the effect of the MBLT in the present study, we

did not implement such a manipulation. Moreover, the idea that leadership behaviors are the causes of leadership effectiveness is widely accepted in leadership theories and tested in numerous empirical papers (e.g., Bono & Judge, 2004; House & Podsakoff, 2013; Judge & Piccolo, 2004).

Finally, as a fifth limitation of our study, leaders could choose their raters in both treatment and control conditions. Consequently, the potential for biased results due to social desirability or leniency cannot be ruled out. The selection process may have favored positive relationships, resulting in more favorable rating outcomes. However, it is important to note that rater self-selection applied to both the MBLT and the active control condition. Furthermore, to reduce the chances of confounding, raters provided ratings both before and after the training. Thus, although more favorable ratings may have occurred, they are unlikely to explain changes in ratings over time.

To address the limitations associated with our study design, we encourage future research to extend this study by using true field experiments with random assignment of leaders to training conditions and raters to leaders. Moreover, to disentangle the unique effects of each training program component (i.e., workshop sessions and coaching) on training outcomes and examine the present findings' robustness, future studies should use different training interventions. Additionally, researchers could consider including multiple conditions in their intervention studies. Relatedly, researchers may consider employing qualitative research approaches such as inductive thematic analysis to examine the effects of different MBLT methods, such as coaching. Such research can help identify common challenges leaders face and how mindfulness-based approaches can help address these challenges. Furthermore, future studies could also extend for longer time periods with multiple assessments and include multi-

level outcome measures such as self- and other-ratings as well as unit performance to estimate the ROI of the leadership training program (Day et al., 2014; Urrila, 2021). Such research could go a long way in corroborating the present findings.

While our current study examined the effects of MBLT on a relatively wide range of leader behaviors, it may be worth exploring the effects of these interventions on other positive leadership behaviors, such as servant leadership (Greenleaf, 2002) and ethical leadership (Brown et al., 2005). Also, given our results suggest that MBLT reduces negative leader behaviors, more studies investigating the mechanisms through which mindfulness-based interventions can reduce destructive or toxic behaviors such as abusive supervision (Liang et al., 2016) in problematic situations in the workplace could be of value. Finally, future studies could explore potential moderating effects that may impact the efficacy of MBLTs. For example, given that organizations today routinely operate across cultural borders and employ a multicultural workforce, considering how training participants' cultural background affects the effects of training interventions presents a worthwhile research topic. Moreover, contextual influences such as the organizational culture and support may affect the extent to which leaders are able to translate their training into action. Finally, the presence or absence of follow-up sessions and ongoing maintenance of mindfulness-based leadership practices after the initial training could moderate the training's long-term impact.

Finally, an important strength of this study is the use of an active control condition, which increases the study's internal validity. Having an active control condition that engages in a different activity better isolates the effect of the intervention from confounding factors, such as social interaction or placebo effects (Davidson & Kaszniak, 2015). Also, it allows for comparison with other interventions, providing valuable information about which interventions may be most

effective for specific outcomes or populations, an important direction for future research.

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Table 1. Confirmatory factor analysis results

Models	χ^2	df	$\Delta \chi^2$ (Δdf)	RMSEA	SRMR	CFI	TLI
Pre-Training (T0)							
Three-Factor Model							
Hypothesized model	143.31	51		0.09	0.03	0.97	0.96
Two Factor Models							
Transformational leadership and leadership effectiveness as a single factor	214.90	53	71.58 (2)	0.12	0.04	0.94	0.92
Transformational leadership and authentic leadership as a single factor	469.61	53	254.72 (2)	0.19	0.09	0.84	0.80
One Factor Model							
Transformational leadership, authentic leadership, and leadership effectiveness as a single factor	566.41	54	96.80 (3)	0.21	0.09	0.81	0.76
Post-Training (T1)							
Three-Factor Model							
Hypothesized model	129.89	51		0.09	0.02	0.98	0.97
Two Factor Models							
Transformational leadership and leadership effectiveness as a single factor	176.96	53	47.07 (2)	0.11	0.02	0.97	0.96
Transformational leadership and authentic leadership as a single factor	241.45	53	64.49 (2)	0.13	0.03	0.95	0.93
One Factor Model							
Transformational leadership, authentic leadership, and leadership effectiveness as a single factor	277.82	54	36.38 (3)	0.14	0.03	0.94	0.92

Table 2. Means, standard deviations, and correlations for all measured study variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Rater gender	0.39	0.49	--												
2. Rater age group	2.06	0.85	-0.29	--											
3. Rater industry	1.98	1.02	0.32	-0.27	--										
4. Transformational leadership T_0	2.50	0.76	0.00	0.04	0.07	[0.95]									
5. Contingent reward T_0	2.50	0.89	-0.01	0.06	0.01	0.84	[0.81]								
6. Passive-avoidant leadership T_0	1.25	0.78	0.02	-0.11	-0.01	-0.57	-0.45	[0.88]							
7. Authentic leadership T_0	2.59	0.78	-0.03	0.02	0.03	0.70	0.66	-0.40	[0.96]						
8. Leadership effectiveness T_0	2.58	0.86	0.04	-0.08	0.13	0.86	0.75	-0.47	0.64	[0.94]					
9. Transformational leadership T_1	2.62	0.78	-0.01	0.00	0.15	0.69	0.59	-0.31	0.44	0.67	[0.96]				
10. Contingent reward T_1	2.57	0.89	-0.06	-0.01	0.07	0.64	0.66	-0.33	0.46	0.60	0.85	[0.76]			
11. Passive-avoidant leadership T_1	1.37	0.76	0.05	-0.12	-0.11	-0.38	-0.29	0.55	-0.28	-0.39	-0.39	-0.34	[0.87]		
12. Authentic leadership T_1	2.70	0.83	0.05	-0.07	0.08	0.64	0.55	-0.32	0.45	0.66	0.90	0.76	-0.43	[0.97]	
13. Leadership effectiveness T_1	2.66	0.90	0.02	-0.06	0.12	0.64	0.56	-0.31	0.42	0.70	0.93	0.78	-0.38	0.90	[0.96]

Notes. T_0: pre-training measurement; T_1: post-training measurement. Gender: 0=male, 1=female; age group: 1= <39 years, 2= 39-49 years, 3= >50 years. Industry: 1=logistics (as the most common industry), 2=trading, 3= engineering services, 4= professional services. McDonald's omega on the diagonal.
All correlations above .14 are significant at $p < .05$, above .17 significant at $p < .01$, and above .23 significant at $p < .001$.

Table 3: Leadership behaviors and leadership effectiveness scores, pre-training and post-training, for each condition

		Pre-Training		Post-Training	
		Control	Intervention	Control	Intervention
Leadership Behavior					
Transformational	M	2.35	2.60	2.35	2.86
	SD	*0.79*	*0.72*	*0.83*	*0.65*
Contingent reward	M	2.30	2.65	2.30	2.82
	SD	*0.89*	*0.85*	*0.88*	*0.82*
Passive-avoidant	M	1.27	1.26	1.46	1.27
	SD	*0.77*	*0.78*	*0.74*	*0.77*
Authentic	M	2.45	2.70	2.41	2.96
	SD	*0.82*	*0.71*	*0.93*	*0.63*
Leadership Effectiveness					
Effectiveness	M	2.37	2.72	2.33	2.93
	SD	*0.91*	*0.78*	*0.96*	*0.72*

Table 4: Regression analyses of the effect of mindfulness-based leadership training (MBLT) on leadership behaviors and effectiveness (without demographic controls)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Dependent variable	Transformational		Contingent reward		Passive-avoidant		Authentic		Effectiveness	
Independent variables	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Condition	0.34***	(0.08)	0.43***	(0.10)	0.30**	(0.10)	-0.18*	(0.09)	0.36***	(0.09)
Transformational T_0	0.68***	(0.06)								
Contingent reward T_0			0.63***	(0.06)						
Passive-avoidant T_0					0.53***	(0.05)				
Authentic T_0							0.43***	(0.08)		
Effectiveness T_0									0.69***	(0.06)
(Constant)	0.75***	(0.16)	1.36***	(0.23)	0.84***	(0.16)	0.79***	(0.10)	0.68***	(0.17)
N	205		205		205		205		205	
R^2	0.53		0.27		0.46		0.31		0.53	

Notes. Condition coded as 0: active control (presentation skills training) and 1: MBLT. T_0: pre-training measurement. Coefficients (*b*) are unstandardized regression coefficient. Robust standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05

Table 5: Regression analyses of the effect of MBLT on leadership behaviors and effectiveness (with all control variables)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Dependent variable	Transformational		Contingent reward		Passive-avoidant		Authentic		Effectiveness	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Condition	0.34***	(0.09)	0.28**	(0.10)	-0.15	(0.09)	0.43***	(0.09)	0.40***	(0.10)
Rater gender	-0.15	(0.09)	-0.20	(0.11)	0.11	(0.12)	-0.03	(0.11)	-0.10	(0.09)
Rater age group										
40 - 49	0.06	(0.10)	0.07	(0.12)	-0.02	(0.11)	0.18	(0.11)	0.06	(0.11)
> 50	0.05	(0.11)	-0.01	(0.15)	-0.14	(0.10)	0.08	(0.13)	0.08	(0.13)
Leader age group										
40 – 49	-0.18	(0.10)	-0.13	(0.12)	0.23*	(0.10)	-0.24	(0.12)	-0.21	(0.11)
> 50	-0.21	(0.13)	0.04	(0.11)	0.00	(0.11)	-0.31*	(0.15)	-0.37**	(0.12)
Leader gender	-0.06	(0.10)	-0.16	(0.11)	0.22	(0.11)	-0.15	(0.13)	-0.11	(0.11)
Industry										
Trading	-0.00	(0.11)	-0.11	(0.13)	-0.12	(0.12)	-0.32*	(0.14)	-0.15	(0.14)
Engineering serv.	0.25*	(0.11)	0.18	(0.12)	-0.20	(0.11)	0.15	(0.13)	0.07	(0.12)
Professional serv.	0.12	(0.19)	0.37*	(0.17)	-0.35	(0.23)	0.16	(0.18)	0.07	(0.16)
Transformational T_0	0.66***	(0.06)								
Contingent reward T_0			0.60***	(0.06)						
Passive-avoidant T_0					0.52***	(0.06)				
Authentic T_0							0.40***	(0.07)		
Effectiveness T_0									0.66***	(0.06)
(Constant)	0.87***	(0.20)	1.04***	(0.22)	0.75***	(0.14)	1.59***	(0.22)	0.91***	(0.20)
N	203		203		203		203		203	
R^2	0.55		0.49		0.36		0.33		0.56	

Notes. Condition coded as 0: active control (presentation skills training) and 1: MBLT. Gender coded as 0: male and 1: female. Age group coded as 1: <39 (baseline), 2: 39-49, 3: >50. Industry coded as 1: logistics (baseline), 2: trading, 3: engineering services, and 4: professional services. T_0: pre-training measurement. Coefficients are unstandardized. Robust standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05

Figure 1. Mediation analysis results for the effect of mindfulness-based leadership training (MBLT) (coded 1, control = 0) intervention on leadership effectiveness through transformational (panel 1), contingent reward (panel 2), passive-avoidant (panel 3), and authentic (panel 4) leadership behaviors. Above the mediators are the indirect effects. Along the dotted line are direct and total (in parentheses) effects.
*** p<0.001, ** p<0.01, * p<0.05

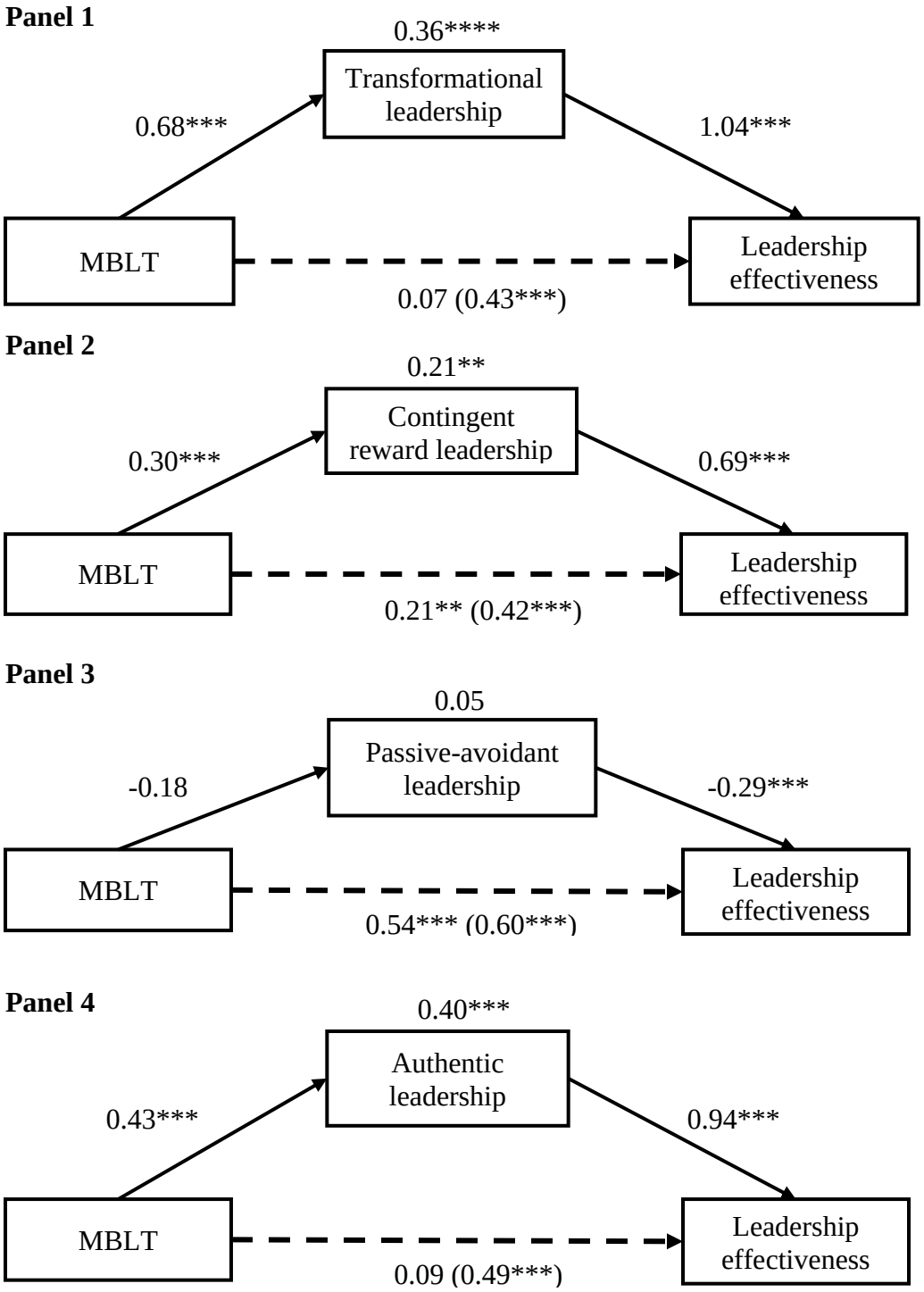

Figure 2. Multiple mediation analysis results. Above or below the mediators are the indirect effects. Along the dotted line are direct and total (in parentheses) effects of the intervention. *** p<0.001, ** p<0.01, * p<0.05