


# Does Leaders' Mindfulness Benefit Followers? A Meta-analytic Review and Research Agenda

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Within leadership research, mindfulness is increasingly viewed as being critical for leadership effectiveness. Central to leadership is the ability to support, motivate, and engage followers – that is, the capacity to have influence. Mindfulness has been proposed as a valuable enabler of effective leadership influence. In this study, we synthesize a growing body of research on mindfulness in leadership contexts by reviewing how and under what conditions mindful leaders influence their followers. We meta-analysed two associations: leaders' mindfulness and leadership behaviours directed towards followers; and leaders' mindfulness and follower outcomes (i.e., well-being, performance and leader–follower relations). Based on a pool of 109 studies with 396 effect sizes and 19,887 participants, we found that leaders with higher mindfulness engage in more follower-centred leadership behaviours, such as more transformational and authentic leadership ( $r = 0.39$  [0.22, 0.54]), and as a result have better relations with followers ( $r = 0.33$  [0.25, 0.40]), and have followers with better well-being ( $r = 0.33$  [0.25, 0.41]) and performance ( $r = 0.35$  [0.29, 0.41]). Longitudinal and emerging intervention evidence corroborates this pattern of findings. Key contributions of this review are critically evaluating the quality of existing studies and outlining a research agenda to advance this field.

You cannot manage others unless you manage yourself first. – Peter Drucker

As organizational leaders navigate increasing complexity and change, notable advances have been made in the area of leadership development, that is, efforts aimed at expanding leaders' capacity to be effective (Day and Dragoni, 2015). One active line of enquiry is the role of *mindfulness* – open and non-defensive awareness of what is occurring – as a leadership attribute that may help leaders respond to the challenges they face with greater mental clarity, discernment, and emotional balance (Good *et al.*, 2015; London, Sessa and Shelley, 2023; Urrila, 2022). To this end, a growing body of research has examined the effects of mindfulness in leadership settings (Stuart-Edwards, MacDonald and Ansari, 2023; Urrila, 2022; Zhou, Wang and Sin, 2023). In the present review, we extend this work and consider the effects of leaders' mindfulness on outcomes for followers.

As noted by Day and Dragoni (2015, p. 135), 'at its most fundamental level, leadership is a social influence process... In this sense, leaders and followers play important and interdependent roles'. In leadership contexts, important questions remain regarding the potential for mindfulness to enhance the quality of leaders' influence on followers (Good *et al.*, 2015). Because mindfulness involves attentiveness to present-moment experience and an open, non-judgemental attitude (Bishop *et al.*, 2004; Brown and Ryan, 2003), it may enable leaders to regulate their own responses and thereby be more aware of their followers' needs. With greater awareness of followers' needs, mindful leaders may engage in more follower-centred leadership behaviours which serve to enhance the well-being and work performance of followers. Our review examines these possibilities.

Despite an increase in research on leader mindfulness in recent years (e.g., Urrila, 2022; Zhou, Wang and Sin, 2023), the empirical evidence on the effects of leader

Table 1. Summary of contributions and gaps in recent reviews of mindfulness in leadership contexts

Review paper	Includes <i>self-reported</i> mindfulness as a predictor of follower outcomes	Includes mindfulness <i>interventions</i> as a predictor of follower outcomes	Examines a priori moderators	Implements a systematic review protocol	Includes risk of bias / quality ratings
Bartlett <i>et al.</i> (2019)	X	X	✓	✓	✓
Donaldson-Feilder, Lewis and Yarker (2018)	X	X	X	✓	✓
Urrila (2022)	X	X	X	✓	X
Jamieson and Tuckey (2017)	X	X	X	X	X
Vonderlin <i>et al.</i> (2020)	X	X	✓	✓	✓
Zhou, Wang and Sin (2023)	✓	X	X	✓	X

mindfulness on followers is limited. There is a need to synthesize this research and assess the quality of the evidence base (Bartlett *et al.*, 2019; Good *et al.*, 2015). As depicted in Table 1, prior studies have mostly focused on the effects of leader mindfulness on leaders themselves, rather than the effects on followers (e.g., Donaldson-Feilder, Lewis and Yarker, 2018) or have offered systematic review but not meta-analytic evidence (e.g., Urrila, 2022). A recent meta-analysis by Zhou *et al.* (2023) provided an initial synthesis of the effects of leader mindfulness on leader and follower outcomes. Our review extends these prior reviews in five important ways, especially regarding follower outcomes.

First, we draw on self-regulatory explanations, namely conservation of resources theory (COR; Hobfoll, 1989) and self-determination theory (SDT; Ryan and Deci, 2000, 2017), to consider *why* mindfulness might enhance the quality of leaders' influence on their followers. As we detail below, we propose that because mindfulness aids leaders' self-regulation (e.g. Dietl and Reb, 2021; Ryan, Donald and Bradshaw, 2021), mindful leaders are better placed to engage in follower-centred leadership behaviours, and also enhance outcomes for followers, such as their well-being, work performance and the quality of leader–follower relations. In this review, we meta-analyse two specific 'paths' linking leader mindfulness and follower outcomes. The first path is the effect of leader mindfulness on *follower-centred* leadership behaviours, such as authentic leadership, servant leadership, ethical leadership, and transformational leadership. The second path considers the effect of leader mindfulness on *followers' well-being, performance, and leader–follower relations*. We then run a meta-analytic path model, where we test whether follower-centred leadership behaviours *mediate* the link between leader mindfulness and follower outcomes. Leader mindfulness has been shown to have both direct and indirect effects on followers (e.g., Reb *et al.*, 2019), and we provide a meta-analytic synthesis of these effects and their magnitude.

Second, we extend Zhou *et al.* (2023) and include effects not just of associations between leader mindfulness and follower outcomes, but also evaluate the effects

of mindfulness *interventions* for leaders on followers. Including intervention studies is critical to a better understanding of whether *changes* to leader mindfulness have flow-on benefits for followers, beyond associations (Moher *et al.*, 2009).

Third, we add nuance to the examination of leader mindfulness and follower outcomes by including *moderation* analysis, which prior reviews have not (e.g., Donaldson-Feilder, Lewis and Yarker, 2018; Urrila, 2022; Zhou, Wang and Sin, 2023). Moderation analysis is a core tenet of the meta-analytic method and can provide useful insights into specific conditions in which meta-analytic effects occur, as well as insight into their generalizability (e.g., if effects are robust across multiple moderators; M. W. L. Cheung, 2015).

Fourth, we draw on state-of-the-art *risk of bias* protocols to evaluate the quality of studies examining leader mindfulness and follower outcomes (Moher *et al.*, 2009). Such analysis is critical in assessing the quality of existing evidence and in guiding future research (Moher *et al.*, 2009). Ours is the first meta-analysis on leader mindfulness to incorporate a risk of bias protocol, answering prior calls for such analysis (e.g., Bartlett *et al.*, 2019; Jamieson and Tuckey, 2017).

Finally, we identify gaps in the evidence base and set out a *research agenda* for this growing research domain. In the sections that follow, we discuss the theoretical background on leader mindfulness, before developing the main hypotheses of this meta-analysis.

### Leader mindfulness

Mindfulness is commonly defined within scientific literature as an open, non-judgemental and receptive awareness of present-moment experiences and events (Bishop *et al.*, 2004; Brown and Ryan, 2003). This conceptualization is adapted largely from Buddhist philosophy, where the cultivation of an accepting, receptive awareness is a core tenet of contemplative practice, and also a skill that can be integrated into day-to-day life and work (for in-depth discussions, see Brown and Ryan, 2003; Good *et al.*, 2015; Lomas and Medina *et al.*, 2017). A notable

feature of this definition of mindfulness is that it involves both an attentional element (i.e., present-centred attention to current events) and an attitudinal one (i.e., a receptive, open and non-judgemental attitude; Bishop *et al.*, 2004). Mindfulness has been studied variously as a trait, a state, and a 'skill' that can be developed through practice (Brown and Ryan, 2003; Good *et al.*, 2015). Due to these various approaches to researching the construct, we included studies of mindfulness *interventions* for leaders, as well as studies that examine the construct itself in leadership contexts, either as a *trait* or a *state*.

In organizational settings, mindfulness has been shown to reduce employee stress and enhance employee well-being, work performance, and interpersonal relationships (Bartlett *et al.*, 2019; Donald and Atkins, 2016; Donald *et al.*, 2016; Good *et al.*, 2015; Lomas *et al.*, 2018; Schultz *et al.*, 2015). Building on this work, scholars have recently begun examining the effects of mindfulness among *leaders* (Konte and Xiaohui, 2021; Rupperecht *et al.*, 2019; Urrila, 2022; Zhou, Wang and Sin, 2023). Drawing on the above definition and prior theorizing on mindfulness in leadership contexts (e.g., Reb *et al.*, 2019; Schuh *et al.*, 2019; Zhou, Wang and Sin, 2023), we define leader mindfulness as *a leader's open, non-judgemental and receptive awareness of present-moment experiences and events*. Thus, leader mindfulness is not conceptually distinct from established general definitions of mindfulness but refers to the practice of mindfulness in a leadership context (Reb *et al.*, 2014; Schuh *et al.*, 2019). Leaders operate in a unique context, needing to manage complexity and ambiguity, while at the same time cultivating authentic and productive relationships with followers (Hakimi, Van Knippenberg and Giessner, 2010; Uhl-Bien and Arena, 2018). This 'social influence' context makes the study of leader mindfulness particularly valuable; that is, examining whether and why mindfulness enables leaders to influence their followers in productive and beneficial ways, and the potential boundary conditions for these effects (Reb *et al.*, 2014; Schuh *et al.*, 2019; Urrila, 2022).

#### *Why does leader mindfulness benefit followers?*

We anticipate that leader mindfulness will precipitate more follower-centred leadership behaviours and will improve outcomes for followers. These predictions are underpinned by a self-regulation view of the effects of mindfulness among leaders (Dietl and Reb, 2021; Hülshager *et al.*, 2021; Schuh *et al.*, 2019). Our central claim is that mindfulness enables leaders to more clearly observe and regulate their responses to situations, and act in ways that better meet followers' needs. We anticipate that such responses are possible because mindfulness enables leaders to conserve energetic resources and also to draw on deeper, intrinsic values in responding to leader-

ship challenges. To make these arguments, we draw on COR (Hobfoll, 1989) and SDT (Ryan and Deci, 2017; Ryan, Donald and Bradshaw, 2021). Drawing on COR theory, we propose that leader mindfulness helps conserve the *quantity* of leaders' self-regulatory resources, while drawing on SDT, we propose that mindfulness enhances the *quality* of leaders' self-regulation, as we now detail.

COR theory proposes that individuals strive to conserve their current store of resources and to acquire resources to prevent future resource loss (Halbesleben *et al.*, 2014). Resources may include time, energy, and knowledge (Halbesleben *et al.*, 2014). For leaders, resources need to be judiciously managed, and can be easily depleted (Lin, Scott and Matta, 2019; Stein, Schümann and Vincent-Höper, 2021). When leaders' self-regulatory resources are drained, leaders make poorer quality decisions and have less capacity to support the well-being and work performance of their followers (Stein, Schümann and Vincent-Höper, 2021). Mindfulness has been proposed as a valuable means of conserving leaders' self-regulatory resources (Hülshager *et al.*, 2014; Schuh *et al.*, 2019). Because mindful individuals are less reactive and defensive, they are better able to self-regulate their responses, thereby conserving resources for responses that are more considered and meet the needs of followers (Liu and Zhang, 2021; Reb *et al.*, 2019).

Further, we draw on SDT (Ryan and Deci, 2017) to propose that mindfulness helps leaders respond to followers' needs in ways that are considered and values-based. Mindfulness, a central construct within SDT, is said to enhance the *quality* of individual self-regulation (Ryan and Deci, 2017). That is, SDT proposes that mindful individuals have a broader 'informational base' from which to make decisions, thus allowing actions to be more aligned with personal values and experienced as being more self-congruent (Ryan, 2023; Ryan and Deci, 2017). Within SDT, this high-quality self-regulation is said to be autonomous – that is, where actions are experienced as being volitional and self-authored (Ryan, 2023; Ryan and Deci, 2017). Substantial evidence links mindfulness and more autonomous self-regulation (Donald *et al.*, 2020; Ryan and Deci, 2017; Schultz *et al.*, 2015). Further, SDT proposes that with more autonomous self-regulation, mindful individuals are better attuned to the needs of others and are more prosocial, and meta-analytic evidence supports this (e.g., Berry *et al.*, 2020; Donald *et al.*, 2019). In our review, we extend this theorizing to leadership contexts, to propose that leaders who are mindful will be more intrinsically attuned and responsive to the needs of followers, as reflected in leadership behaviours that are follower-centred in nature and that enhance outcomes for followers (Ryan, Donald and Bradshaw, 2021; Schultz *et al.*, 2015).

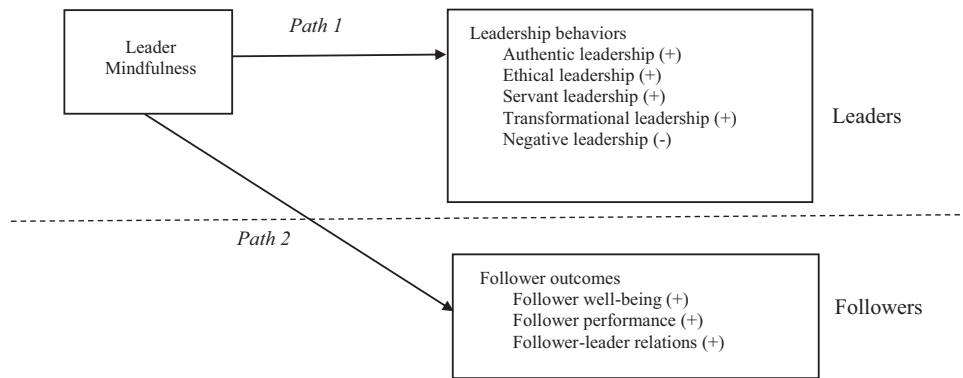


Figure 1. Paths between leader mindfulness and leader behaviours and follower outcomes examined in the meta-analysis. + and – signs indicate the expected valence of the association between leader mindfulness and each outcome type

Drawing this theorizing together, we anticipate that leader mindfulness will promote more follower-centred leadership behaviours that improve followers' well-being and performance, and enhance leader–follower relations. In our review, we examine the association between leader mindfulness and leadership behaviours that are directed toward followers (see Figure 1, Path 1); and follower outcomes (i.e., follower well-being, performance and leader–follower relations; see Figure 1, Path 2). We now elaborate on each of these paths.

#### *Leader mindfulness and follower-centred leadership behaviours (Path 1)*

*Positive leadership (authentic, ethical, servant, and transformational leadership).* Within leadership scholarship, 'positive leadership forms' include authentic, ethical, servant and transformational leadership behaviours (Hoch *et al.*, 2018; Lemoine, Hartnell and Leroy, 2019). Positive leadership forms are said to 'increase followers' confidence and result in positive outcomes, beyond task compliance, such as motivating followers to go beyond expectations, positive self-development and prosocial behaviours' (Hoch *et al.*, 2018, p. 502). Authentic, ethical, servant, and transformational leadership behaviours share an underlying common core in morality, values, and a sense of care and support for followers (Banks *et al.*, 2018). Following our theorizing above, we anticipate that leader mindfulness will promote these positive leadership forms. That is, mindful leaders are able to meet the needs of those they lead because they have enhanced self-regulatory resources (both quality and quantity), which can be directed in beneficial ways towards followers (Liu *et al.*, 2021; Schuh *et al.*, 2019). This leads to our first hypothesis:

**H1:** Leader mindfulness has a positive association with positive leadership behaviours, namely authentic leadership (H1a), ethical leadership (H1b), servant leadership (H1c) and transformational leadership (H1d).

*Negative leadership.* Further, we anticipate that leader mindfulness will inhibit leadership approaches that seek to thwart the development of followers, such as destructive leadership or abusive supervision. That is, we expect negative links between leader mindfulness and forms of leadership that are defensive, manipulative, and antisocial. Drawing on COR theory and SDT, we anticipate that mindfulness facilitates greater openness and non-defensiveness in interpersonal situations, and greater responsiveness to the needs of others (Berry *et al.*, 2020; Donald *et al.*, 2019), which is the antithesis of antisocial behaviour. In support of this, studies have found that leader mindfulness is a protective factor against abusive supervision of followers (Qu *et al.*, 2023) and forms of destructive leadership (Lange and Rowold, 2019). Our second hypothesis is therefore:

**H2:** Leader mindfulness has a negative association with negative leadership behaviours.

#### *Leader mindfulness and follower well-being, performance and leader–follower relations (Path 2)*

We now examine why leader mindfulness is likely to promote follower well-being, performance, and leader–follower relations. First, regarding *follower well-being*, there have been recent calls for more research on the effects of leadership behaviours on followers' well-being (e.g., Inceoglu *et al.*, 2018). In this review, we answer this call. Drawing on COR theory, we expect that mindful leaders have greater self-regulatory resource capacity and energy to support followers' well-being and development (Liu *et al.*, 2021). Relatedly, drawing on SDT, we propose that such leaders will self-regulate in a way that is more connected and sensitive to followers' needs, thereby enhancing followers' well-being and vitality (Deci, Olafsen and Ryan, 2017; Reitz *et al.*, 2016; Urrila, 2022). This leads to our next prediction:

**H3:** Leader mindfulness has a positive association with follower well-being.

A second key follower outcome is *follower performance*. Because mindful leaders have greater self-regulatory resource capacity, we expect they are better able to engage in important elements of performance management that are energetically demanding, such as providing meaningful feedback and having coaching conversations (Liu et al., 2021; Reb et al., 2019; Schuh et al., 2019). Relatedly, informed by SDT, because mindful leaders are more aware of followers' needs, they are better placed to provide feedback, structure tasks, and elicit input in ways that help followers grow and thrive, and thereby sustain work performance (Kanat-Maymon, Elimelech and Roth, 2020; Ryan and Deci, 2017). Consistent with this, an emerging body of evidence demonstrates linkages between leader mindfulness and a range of follower performance outcomes (e.g., M. W. L. Cheung, 2018; S. Y. Cheung et al., 2020; Longshore and Sachs, 2015; Reb et al., 2019; Schuh et al., 2019). Our next hypothesis is therefore:

**H4:** Leader mindfulness has a positive association with follower performance.

Finally, the third grouping of follower outcomes we examine in this review is *leader–follower relations*, which pertains to the quality of trust, mutual respect, and engagement that leaders and followers share with each other (Martin et al., 2018). SDT posits that leader mindfulness will enhance the quality of relations that followers experience, eliciting a greater sense of connection and interpersonal trust between the leader and follower (Deci, Olafsen and Ryan, 2017; Ryan and Deci, 2017). As mindful leaders are less 'ego-based' (Niemic, Ryan and Brown, 2008), they are more likely to be open and transparent with followers and seek follower input on decisions (Good et al., 2015; Reb et al., 2014), which enhances the quality of leader–follower relations (Kanat-Maymon, Elimelech and Roth, 2020; Roche and Haar, 2012). Further, drawing on COR theory, because mindful leaders better conserve self-regulatory resources, they have more capacity to build high quality relationships with followers (e.g., Hülshager, van Gils and Walkowiak, 2021; Schuh et al., 2019). This leads to our next hypothesis.

**H5:** Leader mindfulness is positively associated with leader–follower relations.

Our final hypothesis involves testing a serial path model, wherein leader mindfulness indirectly benefits followers via follower-centred leadership behaviours. An abundance of evidence links follower-centred and positive leadership behaviours with follower well-being and performance (e.g., Hoch et al., 2018; Kanat-Maymon et al., 2020; Liu et al., 2021; Xie et al., 2020). Follower-centred leaders provide clear guidance and structure to followers, support their development and engage with followers authentically and ethically – at-

tributes that promote greater follower work engagement and satisfaction at work, and also increase job commitment and performance (Deci, Olafsen and Ryan, 2017; Graves and Luciano, 2013; Kanat-Maymon et al., 2020; Skiba and Wildman, 2019). Thus, we anticipate that follower-centred leadership behaviours are a mechanism by which mindful leaders have a positive impact on the well-being and performance of their followers. This leads to our final hypothesis.

**H6:** Leader mindfulness will enhance well-being and performance outcomes for followers, via follower-centred leadership behaviours.

Systematic reviews and meta-analyses make both retrospective and prospective contributions (Borenstein et al., 2021; Moher et al., 2009). The *retrospective* contribution lies in summarizing the evidence base against a priori predictions (i.e. H1–H6), while the *prospective* contribution lies in identifying research questions and methodological issues that need to be addressed to advance the field (DeSimone et al., 2021; Moher et al., 2009). To inform a review's prospective contribution, an increasingly common element of meta-analysis is to highlight current evidence as well as gaps in knowledge (e.g., via an 'evidence and gap map'; see Campbell et al., 2023; Snijlsteit et al., 2016). To inform our consideration of future research priorities, we identify two research questions on evidence and knowledge gaps in this literature, and on the methodological quality of this literature.

**RQ1:** What is the evidence and what are the gaps in knowledge regarding the effects of leader mindfulness on follower outcomes?

**RQ2:** What methodological issues do future studies of leader mindfulness need to address to advance this field?

## Method

### Research strategy

We conducted a systematic review and meta-analysis. The systematic review enabled us to comprehensively review the effects of leader mindfulness on followers, which was our central research question. To test our hypotheses using quantitative methods, we conducted a meta-analysis (Borenstein et al., 2021). We followed the best-practice guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement in conducting both our systematic review and meta-analysis (Moher et al., 2009). Finally, we highlighted gaps in existing knowledge and identified issues needing further exploration.

### Literature search

To conduct this systematic review, we developed a comprehensive set of search terms, which are listed in Section S4 in the Supporting Information. To capture studies from a wide range of leadership contexts, we searched databases (up until the end of 2024) in psychology, PsycINFO; in business, Business Source Ultimate and ABI/Inform; in healthcare, Medline, Embase and CINAHL; in education, Educational Source (EBSCO), ERIC (Education Resources Information Centre) and ProQuest Education journals; in sports and athletics, SPORTDiscus; as a general search, SCOPUS; and for dissertations, ProQuest Dissertations and Theses Global. We also 'snowball searched' for additional studies from the studies captured in our database search.

### Eligibility criteria

Quantitative studies were eligible for inclusion in this review if they (a) included a measure or manipulation of mindfulness (>50% of the intervention focused on mindfulness) either for leaders or in a context where leadership was being studied; (b) included a measure of leadership behaviour (e.g. transformational leadership, ethical leadership and authentic leadership), or follower outcomes (i.e. follower well-being, performance or leader–follower relations); (c) reported a quantitative effect of the effect of leader mindfulness on follower outcomes and (d) participants were over 18 years of age. We included both published and unpublished studies and datasets, per PRISMA guidelines. In Sections S1–S3 in the Supporting Information, we describe the measures of leader mindfulness, follower-centred leadership behaviours, follower well-being, follower performance and leader–follower relations that were included in this review.

### Study selection and data extraction

Our eligibility criteria were used to select studies via title and abstract screening and full-text screening. Study screening was conducted using the Covidence software package. Following recommendations in Moher *et al.* (2009), two study authors independently screened all studies in the review. Study screeners were current PhD students or PhD holders in organizational psychology and management. Screeners were trained via a series of 4 × 1-hour sessions, where inclusion criteria were discussed, and sample papers reviewed. Any conflicts were resolved with input from the lead author. The PRISMA diagram in Figure 3 depicts the study screening process. Following screening, a co-author extracted relevant data from all studies in the review. Section S4 of the Supporting Information has a complete list of data items extracted. A second reviewer independently checked a

random subset of 50% of all extracted values for errors. Where discrepancies were identified, these were discussed with the lead author. With inter-rater reliability of 99.6%, corrections were made to 0.4% of records (304 out of 79,768 total cells with data).

### Summary measures

Data extracted from studies were categorized into either correlational, longitudinal, or intervention study designs, due to the different inferences that can be drawn from each of these designs (Borenstein *et al.*, 2021). For correlational and longitudinal studies, all summary measures were converted to Pearson's  $r$ . For intervention studies, an odds ratio, an eta-squared statistic or a standardized mean difference between treatment and control groups was extracted and converted into Cohen's  $d$  using Rosenthal's (1991, 1994) conversion formulas.

### Meta-analytic methods

After obtaining all effect sizes and corresponding sampling variances, we performed meta-analysis to pool the Cohen's  $d$  and correlations into summary statistics. Study authors commonly report multiple effect sizes, which create dependencies, where effects from the same study tend to be more similar than effects from different studies, which violates the assumptions of basic meta-analytic models (M. W. L. Cheung, 2014, 2015). To address this, we fit three-level meta-analytic models using *metaSEM* (M. W. L. Cheung, 2015). We used paper ID as the clustering variable. The three levels were observations, within-paper heterogeneity ( $I^2_{(2)}$ ) and between-paper heterogeneity ( $I^2_{(3)}$ ).

**Correction for measurement error.** Hunter and Schmidt (2004) have demonstrated that scales with poorer reliability result in biased correlations. We thus adjusted correlation coefficients for unreliability where  $r_c = \frac{r}{(r_{xx})(r_{yy})}$  using the package psychmeta (Wiernik and Dahlke, 2020). We imputed alphas where they were not reported using bootstrapping, where random alphas were selected from observed alphas to replace missing values (Wiernik and Dahlke, 2020). We present raw and correlations corrected for unreliability ( $\hat{\rho}$ ). We use corrected correlations for descriptions of effect sizes and for assessing moderation (Wiernik and Dahlke, 2020). We use uncorrected correlations in forest plots to allow reported effects to be verified. For a justification of combining multi-level meta-analytic techniques (Borenstein *et al.*, 2021; M. W. L. Cheung, 2015) and Hunter and Schmidt's (2004) methods, see Section S5 in the Supporting Information.

**Moderation analysis.** It is generally considered important to understand under what conditions meta-analytic

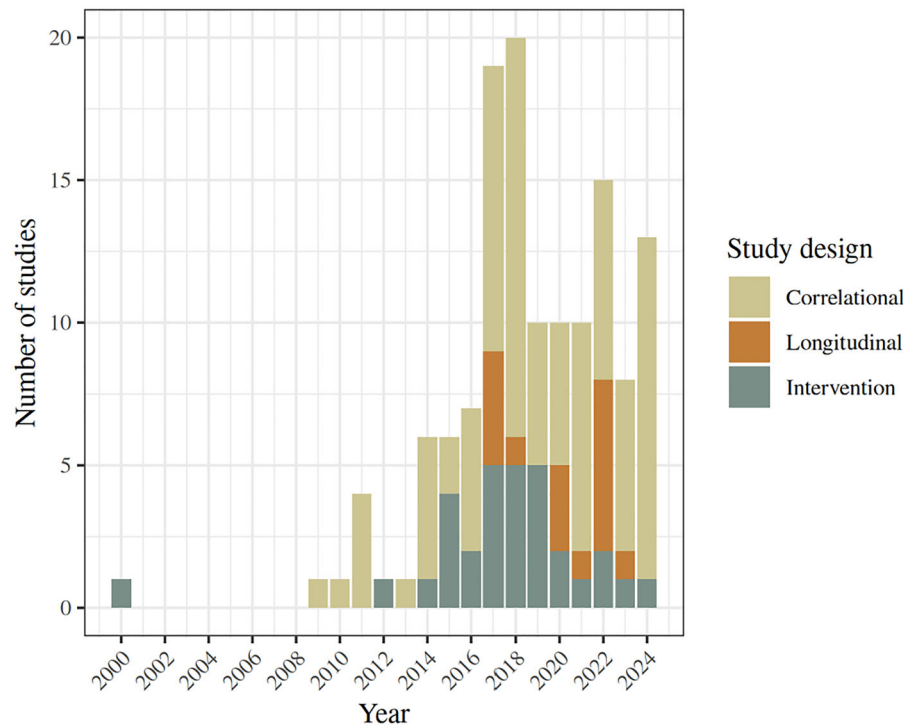


Figure 2. Annual number of studies of mindfulness and leadership by study design

effects are strong or weak (Shadish and Sweeney, 1991). Moderation analysis achieves this by testing whether covariates (moderators) predict systematic differences in effect sizes, thereby identifying potential causal pathways to be investigated in future research (Borenstein *et al.*, 2021). In this meta-analysis, because we used three-level meta-analytic regression models to account for dependencies in effect sizes at different levels, each moderation variable we tested was included as a covariate in these multi-level meta-analytic regression models. For a detailed rationale and description of this approach, see M. W. L. Cheung (2015). Multi-level meta-analytic regression allowed us to accurately identify moderators that predict effect sizes within studies and between studies without losing information about the similarity of effects within studies (M. W. L. Cheung, 2015). We examined four 'contextual moderators': leader age, leader gender, industry sector, and geographic region; and five 'method-based moderators': mindfulness component (attention vs. attitude), randomization among intervention studies, reporter of follower outcomes (self vs. other), risk of bias rating, and publication status. For further information on our modelling approach and these moderators, see Section S5 of the Supporting Information.

**Serial path analysis.** To test H6, we used a one-stage meta-analytic structural equation modelling (OSMASEM) approach (M. W. L. Cheung, 2015). OSMASEM models are similar to regular structural

equation models, except that they use correlation matrices as inputs instead of a single covariance matrix (Jak and Cheung, 2020). OSMASEM models are fit from the list of correlation matrices from each study directly (Jak and Cheung, 2020). We ran the OSMASEM using *metaSEM*. Given that item-level data (which allows for measurement error correction in structural models) was not available, we used the bias-corrected correlations as inputs (M. W. L. Cheung, 2015).

**Risk of bias.** We assessed all studies against risk of bias criteria drawn from the Cochrane Risk of Bias tool (Higgins *et al.*, 2011) and NIH Quality Assessment for Controlled Intervention Studies (<https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools>). Further information about these criteria is in the Section S5 in the Supporting Information.

**Publication bias.** The assumptions of traditional publication bias tests (e.g., trim and fill, Egger's regression test and selection models) are violated when there are dependencies among effect sizes (Fernández-Castilla *et al.*, 2021; Rodgers and Pustejovsky, 2021). We thus assessed publication bias using the multi-level Egger's regression test (Rodgers and Pustejovsky, 2021). Following the recommendations provided by Rodgers and Pustejovsky (2021), we included the standard error as a predictor in a three-level model clustered by paper ID. If that model significantly improves upon the fit of its nested baseline model, then effect sizes are correlated with standard errors, which can be caused by

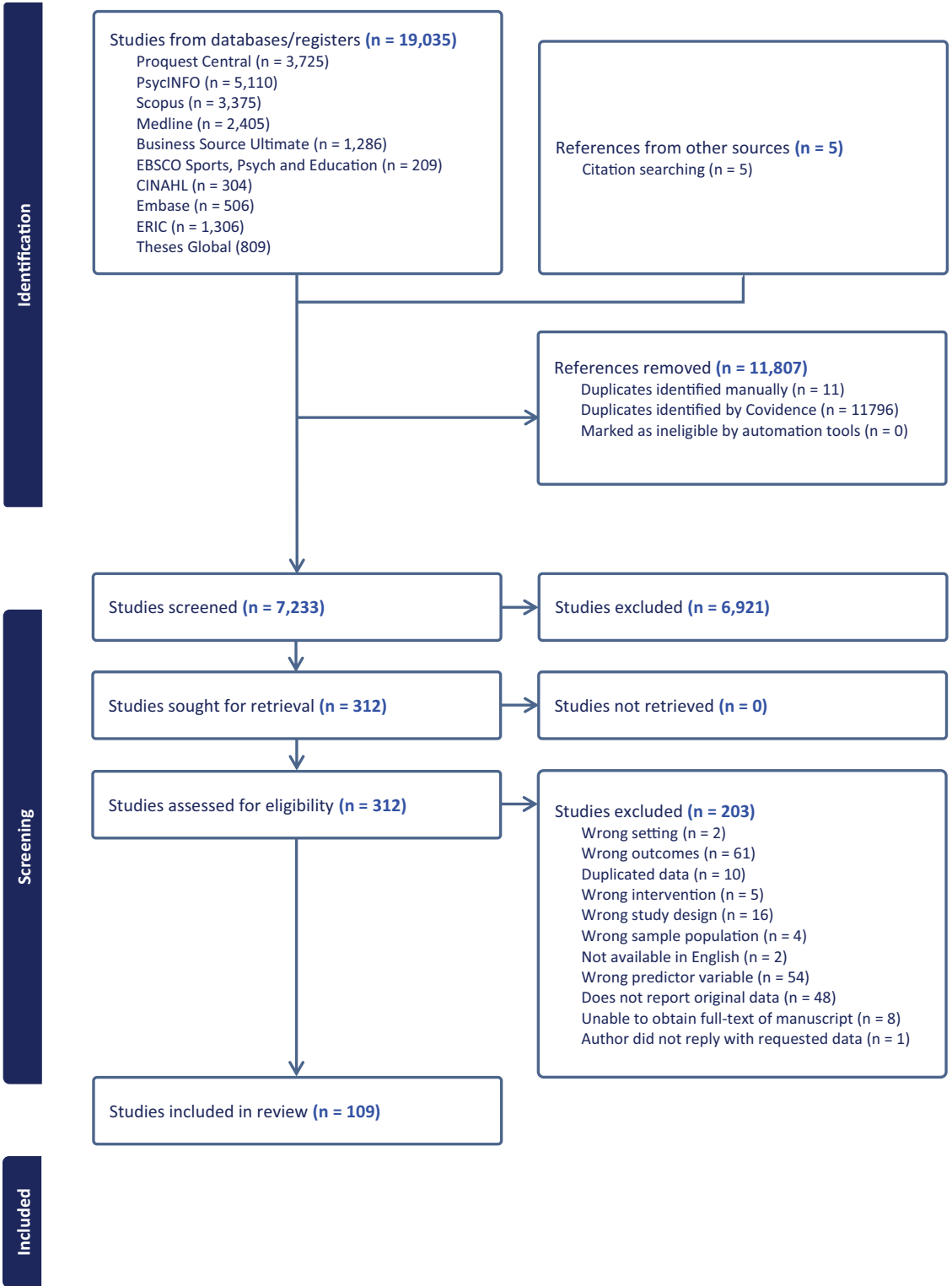


Figure 3. PRISMA flow diagram

publication bias. We also visually inspected funnel plots (see Supporting Information). To improve the readability of funnel plots, we aggregated effects within papers using fixed-effects meta-analyses.

## Results

### Study characteristics and descriptive results

Our search identified 396 effect sizes clustered within 109 studies. Due to the different inferences that can be

Table 2. Meta-analytic association between leader mindfulness and leadership behaviours

Moderation	k	n	Total $n^a$	$\bar{r}$ [95% CI]	$\hat{\rho}$ [95% CI]	SE	$R^2_{(2)}$	$R^2_{(3)}$	Likelihood ratio test
Follower-centred leadership behaviours	47	169	7987	0.31 [0.25, 0.37]	0.35 [0.29, 0.41]	0.03			
Authentic (H1a)	22	39		0.25 [0.18, 0.33]	0.29 [0.21, 0.37]	0.04			
Ethical (H1b)	3	12		0.33 [0.20, 0.46]	0.37 [0.22, 0.52]	0.08			
Servant (H1c)	5	18		0.46 [0.32, 0.60]	0.51 [0.34, 0.67]	0.08			
Transformational (H1d)	16	62		0.33 [0.25, 0.41]	0.37 [0.28, 0.45]	0.04			
Negative leadership <sup>b</sup> (H2)	8	11		0.38 [0.26, 0.49]	0.42 [0.29, 0.54]	0.06			
Age	36	114	6274				0.81	0.00	$\chi^2(1) = 0.23, p = 0.63$
Intercept				0.23 [0.04, 0.42]	0.25 [0.04, 0.46]	0.11			
Mean				0.01 [−0.04, 0.06]	0.01 [−0.04, 0.07]	0.03			
Gender	44	166	7383				0.41	1.80	$\chi^2(2) = 0.75, p = 0.69$
Mostly males	16	57		0.29 [0.21, 0.38]	0.32 [0.23, 0.41]	0.05			
Mixed gender	22	75		0.30 [0.23, 0.38]	0.34 [0.27, 0.42]	0.04			
Mostly females	7	34		0.25 [0.12, 0.37]	0.28 [0.15, 0.41]	0.07			
Region	39	149	6572				2.82	11.52	$\chi^2(5) = 6.24, p = 0.28$
Africa	1	3		0.41 [0.06, 0.77]	0.48 [0.11, 0.85]	0.19			
Asia	13	17		0.28 [0.17, 0.38]	0.30 [0.19, 0.42]	0.06			
Europe	11	31		0.28 [0.16, 0.39]	0.31 [0.19, 0.43]	0.06			
Middle East	1	1		0.75 [0.36, 1.13]	0.89 [0.39, 1.40]	0.26			
North America	12	95		0.35 [0.24, 0.46]	0.39 [0.27, 0.50]	0.06			
Oceania	1	2		0.26 [−0.12, 0.64]	0.35 [−0.06, 0.76]	0.21			
Sector	47	169	7987				21.98	16.67	$\chi^2(8) = 17.34, p = 0.027$
Not specified	8	13		0.30 [0.19, 0.42]	0.34 [0.22, 0.47]	0.06			
Business/IT/Finance	14	32		0.29 [0.20, 0.38]	0.34 [0.25, 0.44]	0.05			
Education	6	42		0.40 [0.26, 0.54]	0.43 [0.28, 0.58]	0.08			
Healthcare	5	27		0.22 [0.06, 0.38]	0.24 [0.08, 0.40]	0.08			
Manufacturing	3	3		0.14 [−0.08, 0.35]	0.15 [−0.07, 0.38]	0.11			
Public Services	3	33		0.41 [0.20, 0.61]	0.39 [0.17, 0.61]	0.11			
Not specified	8	17		0.33 [0.20, 0.46]	0.37 [0.24, 0.51]	0.07			

drawn from correlational, longitudinal, and intervention studies, we report meta-analytic results on each study type (Borenstein *et al.*, 2021). Of 109 studies, 81 reported correlational effects, 16 studies reported longitudinal effects, and 20 studies reported effects from mindfulness interventions. Figure 2 shows the numbers of each study type, by year (2000–2024). In the Supporting Information, Section S8 contains a list of included studies, Tables S1 and S2 display effect sizes and other demographic information for each study, Sections S6 and S7 contain forest plots of individual effect sizes, while Sections S11 and S12 display the contour-enhanced funnel plots.

Evaluating the magnitude of effects in meta-analyses is critical in making the inferences that can be drawn from them (Borenstein *et al.*, 2021). In this review, we drew on guidance from Gignac and Szodorai (2016) and Funder and Ozer (2019) in interpreting the magnitude of correlational effects. Effects in the vicinity of  $r = 0.10$  were considered small;  $r = 0.20$  was considered a medium-size effect, while  $r = 0.30$  was considered a relatively large effect. For effects from intervention studies, we used the guidance provided by Cohen (1988), where  $d = 0.20$  is considered small,  $d = 0.50$  is a medium, and  $d = 0.80$  is a large effect.

### Associations between leader mindfulness and follower-centred leadership behaviours (H1 and H2)

**Correlational and longitudinal studies.** A total of 47 studies reported correlational and longitudinal data relating to H1 and H2, with 169 effect sizes and 7987 study participants. As Table 2 shows, we found a large, positive pooled association between leader mindfulness and follower-centred leadership (authentic, servant, ethical and transformational leadership, and reverse-coded negative leadership;  $r = 0.31$  [0.25, 0.37]). These effects were observed among correlational ( $r = 0.32$  [0.26, 0.38]) and longitudinal studies ( $r = 0.23$  [0.07, 0.38]). There was no evidence that meta-analytic effects varied as a function of publication status or risk of bias ratings. Among the moderators we tested, effects were consistent across leaders' age, gender and geographic region, and were broadly consistent across industry sector. We also found that the 'attention' ( $r = 0.27$  [0.21, 0.33]) and 'attitude' ( $r = 0.19$  [0.12, 0.26]) components of mindfulness each independently predicted more follower-centred leadership behaviours. Lastly, we found moderate-sized positive effects of leader mindfulness where the leadership behaviour was reported by the follower, and large effects when reported by the leader (see Table 2).

Table 2. (Continued)

Moderation	k	n	Total n <sup>a</sup>	$\bar{r}$ [95% CI]	$\hat{\rho}$ [95% CI]	SE	$R^2_{(2)}$	$R^2_{(3)}$	Likelihood ratio test
Study design	47	169	7987				0.50	3.33	$\chi^2(1) = 1.26, p = 0.26$
Correlational	41	158		0.32 [0.26, 0.38]	0.36 [0.30, 0.42]	0.03			
Longitudinal	6	11		0.23 [0.07, 0.38]	0.26 [0.10, 0.42]	0.08			
Mindfulness measure	19	97	2185				45.62	0.00	$\chi^2(1) = 11.48, p < 0.001$
Attention	14	68		0.27 [0.21, 0.33]	0.30 [0.25, 0.36]	0.03			
Attitude	5	29		0.19 [0.12, 0.26]	0.20 [0.12, 0.27]	0.04			
Leadership behaviour reporter	47	169	7987				33.13	0.00	$\chi^2(1) = 21.84, p < 0.001$
Other	22	54		0.21 [0.14, 0.28]	0.24 [0.16, 0.31]	0.04			
Self	32	115		0.37 [0.31, 0.43]	0.42 [0.35, 0.48]	0.03			
Risk of bias rating	47	169	7987				0.15	0.00	$\chi^2(1) = 0.07, p = 0.80$
Intercept				0.33 [0.10, 0.57]	0.38 [0.13, 0.63]	0.13			
Risk of bias score				−0.01 [−0.09, 0.07]	−0.01 [−0.10, 0.08]	0.04			
Publication status	47	168	7871				0.00	1.11	$\chi^2(1) = 0.06, p = 0.80$
No	9	96		0.29 [0.18, 0.41]	0.33 [0.21, 0.45]	0.06			
Yes	38	72		0.31 [0.25, 0.38]	0.35 [0.28, 0.41]	0.03			

Note. k = number of studies, n = number of effects.  $\bar{r}$  = pearson correlation,  $\hat{\rho}$  = pearson correlation adjusted for unreliability, SE = standard error of  $\bar{r}$ .  $R^2_{(2)}$  = percent of within study heterogeneity explained by a given model,  $R^2_{(3)}$  = percent of between study heterogeneity explained by a given model, Likelihood ratio test = test that a model improves over the baseline model which does not include predictors.

<sup>a</sup> Studies could include multiple effect sizes; to prevent double counting participants, we summed the maximum sample size per study. If a study included more than one sample this metric will underestimate the total sample size.

<sup>b</sup> Effects for negative leadership were reverse-coded.

Regarding H1a–H1d, effect sizes for each form of positive leadership were large for authentic leadership ( $r = 0.25$  [0.18, 0.33]), ethical leadership ( $r = 0.33$  [0.20, 0.46]) and transformational leadership ( $r = 0.33$  [0.25, 0.41]), and very large for servant leadership ( $r = 0.46$  [0.32, 0.60]). Regarding H2, leader mindfulness predicted reductions in negative leadership behaviours, with a large effect ( $r = 0.38$  [0.26, 0.49]).

**Intervention studies.** To provide a multi-method test of H1 and H2, we examined the effect of mindfulness interventions on the above leadership behaviours. Across 15 studies with 69 effect sizes and 838 study participants, we found that mindfulness interventions for leaders had a medium-sized effect on follower-centred leadership behaviours ( $d = 0.34$ , 95% CI [0.15, 0.54]). At the level of individual leadership behaviour, there were medium-to-large effects for authentic leadership ( $d = 0.43$ , 95% CI [0.21, 0.65]), a marginally significant small effect for transformational leadership ( $d = 0.22$ , 95% CI [−0.01, 0.44]) and insufficient effects to draw conclusions regarding ethical, servant and negative leadership. Notably, eight intervention studies were randomized controlled trials, and this subset of studies showed a small-to-medium size effect on follower-centred leadership behaviours ( $d = 0.31$ , 95% CI [0.06, 0.56]). As with correlational studies, we did not find that leader age, gender or geographic region moderated these effects. However, we did find variation in effects by industry sector, with interventions in the IT/finance and healthcare sectors yielding large effects. We also found no evidence that publication status or risk of bias moderated these

intervention effects. Table S5 in the Supporting Information shows the meta-analytic findings for the effect of leader mindfulness interventions on positive forms of leadership.

#### *Associations between leader mindfulness and follower outcomes (H3–H5)*

**Correlational and longitudinal studies.** Forty-eight studies, with 140 effect sizes drawn from 9729 participants, reported data on leader mindfulness and follower outcomes. As Table 3 shows, we found evidence of a large, positive association between leader mindfulness and follower outcomes ( $r = 0.34$  [0.29, 0.40]). These effects were observed across both correlational studies ( $r = 0.38$  [0.33, 0.44]) and longitudinal studies ( $r = 0.19$  [0.09, 0.29]). Moderation tests indicated that meta-analytic effects were consistent across leader age, gender and geographic location. We observed positive effects in all industry sectors we analysed, although there was some variation in the magnitude of these effects by industry. There was no evidence that these effects varied by publication status or other risks of bias. Finally, effects were of a similar magnitude between follower-reported and other-reported outcomes (e.g., one's peer or manager), adding to the robustness of these meta-analytic findings.

For H3, we found a large, positive effect of leader mindfulness on follower well-being ( $r = 0.33$  [0.25, 0.41]). Similarly, for H4 on the link between leader mindfulness and follower performance, we also found a large effect ( $r = 0.35$  [0.29, 0.41]). Lastly, for H5, we

Table 3. Meta-analytic association between leader mindfulness and follower outcomes

Moderation	k	n	Total $n^a$	$\bar{r}$ [95% CI]	$\hat{\rho}$ [95% CI]	SE	$R^2_{(2)}$	$R^2_{(3)}$	Likelihood ratio test
All follower outcomes	48	140	9729	0.34 [0.29, 0.40]	0.38 [0.32, 0.44]	0.03			
Follower well-being (H3)	19	35		0.33 [0.25, 0.41]	0.36 [0.28, 0.45]	0.04			
Follower performance (H4)	35	64		0.35 [0.29, 0.41]	0.40 [0.33, 0.47]	0.04			
Leader–follower relations (H5)	23	39		0.33 [0.25, 0.40]	0.36 [0.28, 0.44]	0.04			
Age	30	87	6103				1.10	0.92	$\chi^2(1) = 0.60, p = 0.44$
Intercept				0.04 [−0.50, 0.59]	0.07 [−0.53, 0.67]	0.31			
Mean				0.06 [−0.08, 0.20]	0.06 [−0.09, 0.22]	0.08			
Gender	43	128	8959				0.69	16.65	$\chi^2(2) = 5.13, p = 0.077$
Mostly males	13	47		0.23 [0.15, 0.32]	0.28 [0.18, 0.38]	0.05			
Mixed gender	26	67		0.38 [0.32, 0.44]	0.41 [0.34, 0.49]	0.04			
Mostly females	4	14		0.26 [0.11, 0.41]	0.28 [0.10, 0.46]	0.09			
Region	45	135	9348				0.93	14.44	$\chi^2(3) = 5.98, p = 0.11$
Asia	30	89		0.33 [0.27, 0.39]	0.38 [0.31, 0.45]	0.04			
Europe	5	19		0.18 [0.03, 0.33]	0.20 [0.02, 0.37]	0.09			
Middle East	2	4		0.56 [0.32, 0.80]	0.57 [0.28, 0.86]	0.15			
North America	8	23		0.38 [0.26, 0.49]	0.41 [0.28, 0.55]	0.07			
Sector	48	140	9729				6.36	59.50	$\chi^2(8) = 31.13, p < 0.001$
Business/IT/Finance	12	35		0.18 [0.11, 0.26]	0.20 [0.12, 0.29]	0.04			
Construction	1	10		0.44 [0.23, 0.66]	0.67 [0.42, 0.92]	0.13			
Education	6	17		0.41 [0.30, 0.52]	0.45 [0.33, 0.57]	0.06			
Healthcare	3	8		0.38 [0.22, 0.54]	0.41 [0.23, 0.59]	0.09			
Manufacturing	4	6		0.37 [0.22, 0.52]	0.40 [0.23, 0.57]	0.09			
Public services	2	6		0.59 [0.40, 0.77]	0.66 [0.45, 0.87]	0.11			
Not specified	20	57		0.31 [0.23, 0.38]	0.34 [0.26, 0.43]	0.04			
Study design	48	140	9729				8.00	13.91	$\chi^2(1) = 11.07, p < 0.001$
Correlational	39	116		0.38 [0.33, 0.44]	0.43 [0.36, 0.49]	0.03			
Longitudinal	10	24		0.19 [0.09, 0.29]	0.21 [0.09, 0.32]	0.06			
Reporter of follower outcome	48	140	9729				0.01	0.00	$\chi^2(1) = 0.01, p = 0.93$
Other (e.g. leader, peer)	22	49		0.33 [0.26, 0.41]	0.38 [0.29, 0.47]	0.04			
Follower	38	91		0.35 [0.29, 0.41]	0.38 [0.32, 0.45]	0.03			
Risk of bias rating	48	140	9729				0.00	3.69	$\chi^2(1) = 1.19, p = 0.28$
Intercept				0.40 [0.18, 0.63]	0.53 [0.26, 0.79]	0.13			
Risk of bias score				−0.02 [−0.10, 0.06]	−0.05 [−0.14, 0.04]	0.05			
Publication status	48	140	9729				0.00	5.79	$\chi^2(1) = 1.33, p = 0.25$
Yes	39	109		0.33 [0.27, 0.39]	0.37 [0.30, 0.43]	0.03			
No	9	31		0.39 [0.27, 0.51]	0.46 [0.32, 0.59]	0.07			

Note: Baseline = the model meta-analytic model without any predictors. k = number of studies, n = number of effects,  $\bar{r}$  = Pearson correlation,  $\hat{\rho}$  = Pearson correlation adjusted for unreliability, SE = standard error of  $\hat{\rho}$ .  $R^2_{(2)}$  = percent of within study heterogeneity explained by a given model,  $R^2_{(3)}$  = percent of between study heterogeneity explained by a given model, Likelihood ratio test = test that a model improves over the baseline model which does not include predictors.

<sup>a</sup> Studies could include multiple effect sizes; to prevent double counting participants, we summed the maximum sample size per study. If a study included more than one sample this metric will underestimate the total sample size.

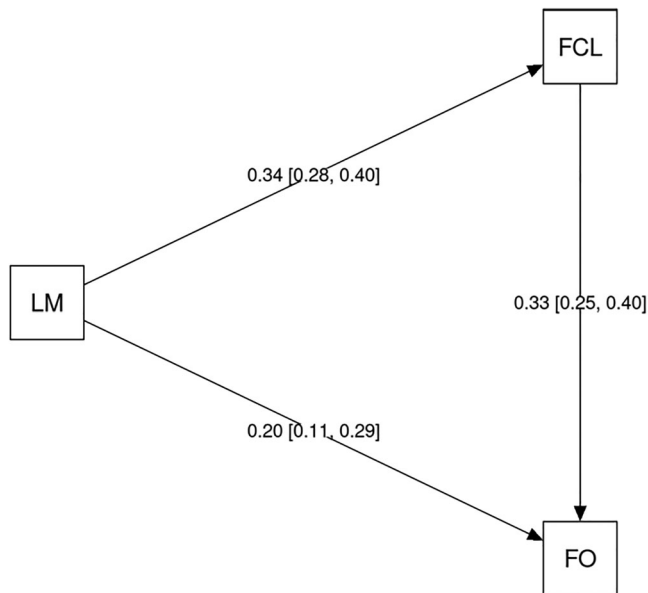


Figure 4. One-stage meta-analytic structural equation model with follower-centred leadership linking leader mindfulness and follower outcomes. FCL, follower-centred leadership; FO, follower outcomes; LM, leader mindfulness. Wald 95% confidence intervals are included in square brackets

again found a large positive link between leader mindfulness and leader–follower relations ( $r = 0.33$  [0.25, 0.40]), consistent with our predictions.

**Intervention studies.** To further test H3–H5, we meta-analysed the effect of leader mindfulness interventions on follower outcomes. Table S6 shows these results. Across 7 studies with 18 effect sizes and 2166 participants, the meta-analytic effect on all outcomes combined was non-different from zero ( $d = 0.19$  [−0.13, 0.52]). However, among the three randomized controlled trials that examined this path, there was a medium-sized positive effect of leader mindfulness interventions on follower outcomes ( $d = 0.39$  [0.06, 0.72]). Regarding H3–H5 specifically, we found that leader mindfulness interventions had a large positive effect on follower well-being (H3,  $d = 0.78$  [0.64, 0.91]). Significant effects were not observed for follower performance (H4) and leader–follower relations outcomes (H5). There was no evidence that publication bias or other risks of bias accounted for variation in effects.

**Serial path model.** We next tested our serial path prediction (H6) that follower-centred leadership behaviours serve as a link between leader mindfulness and enhanced follower well-being, performance, and leader–follower relations. As Figure 4 shows, leader mindfulness was associated with follower-centred leadership ( $r = 0.34$  [0.28, 0.40]), which in turn was associated with enhanced follower outcomes ( $r = 0.33$  [0.25, 0.40]). Further, there was a (smaller) direct path from leader mindfulness to follower outcomes ( $r = 0.20$  [0.11, 0.29]), in-

dicating a partially mediated association between leader mindfulness and follower outcomes.

### Evidence and knowledge gaps (RQ1)

Regarding evidence and gaps in findings (RQ1), Figure 5 provides an overview of effect sizes from correlational and longitudinal studies (Figure 5a) and intervention studies (Figure 5b), to highlight the variables for which there is limited evidence (indicated by missing effect sizes or estimates with large confidence intervals). We discuss the implications of these findings below.

### Assessing the quality of the current evidence base (RQ2)

Our risk of bias assessment indicated that none of the correlational or longitudinal studies included in this review were a ‘high’ risk of bias. A total of 27 correlational studies were assessed as having ‘moderate’ risk of bias. Of the 20 intervention studies in this review, 10 were assessed as having a ‘high’ risk of bias, while 10 were assessed as having a ‘moderate’ risk. Common sources of bias among intervention studies were non-randomization, unblinded allocation to experimental conditions, and the use of convenience samples. A complete list of the risk of bias ratings is in Tables S3 and S4. Notably, across correlational, longitudinal, and intervention studies, we did not find evidence that meta-analytic effects systematically varied across different risk of bias ratings.

## Discussion

The aim of this meta-analytic review was to advance knowledge on the effects of leader mindfulness on followers, drawing on COR theory and SDT. We extended prior reviews (e.g. Zhou, Wang and Sin, 2023) in several valuable ways, including examining effects of leader mindfulness on followers’ well-being, performance, and leader–follower relations, analysing moderating factors and incorporating a serial path model connecting leader mindfulness to follower outcomes via follower-centred leadership. We also conducted a rigorous risk of bias assessment and propose a research agenda to guide future studies in this area.

We found broad support for our hypotheses. Regarding H1 and H2, findings suggest that leader mindfulness is dual-faceted in its impact: it fosters follower-centred leadership behaviours, specifically enhancing positive leadership behaviours – authentic, ethical, servant, and transformational, while reducing negative behaviours that undermine followers. Evidence for these effects was consistent among correlational and longitudinal studies and was largely replicated among intervention studies.

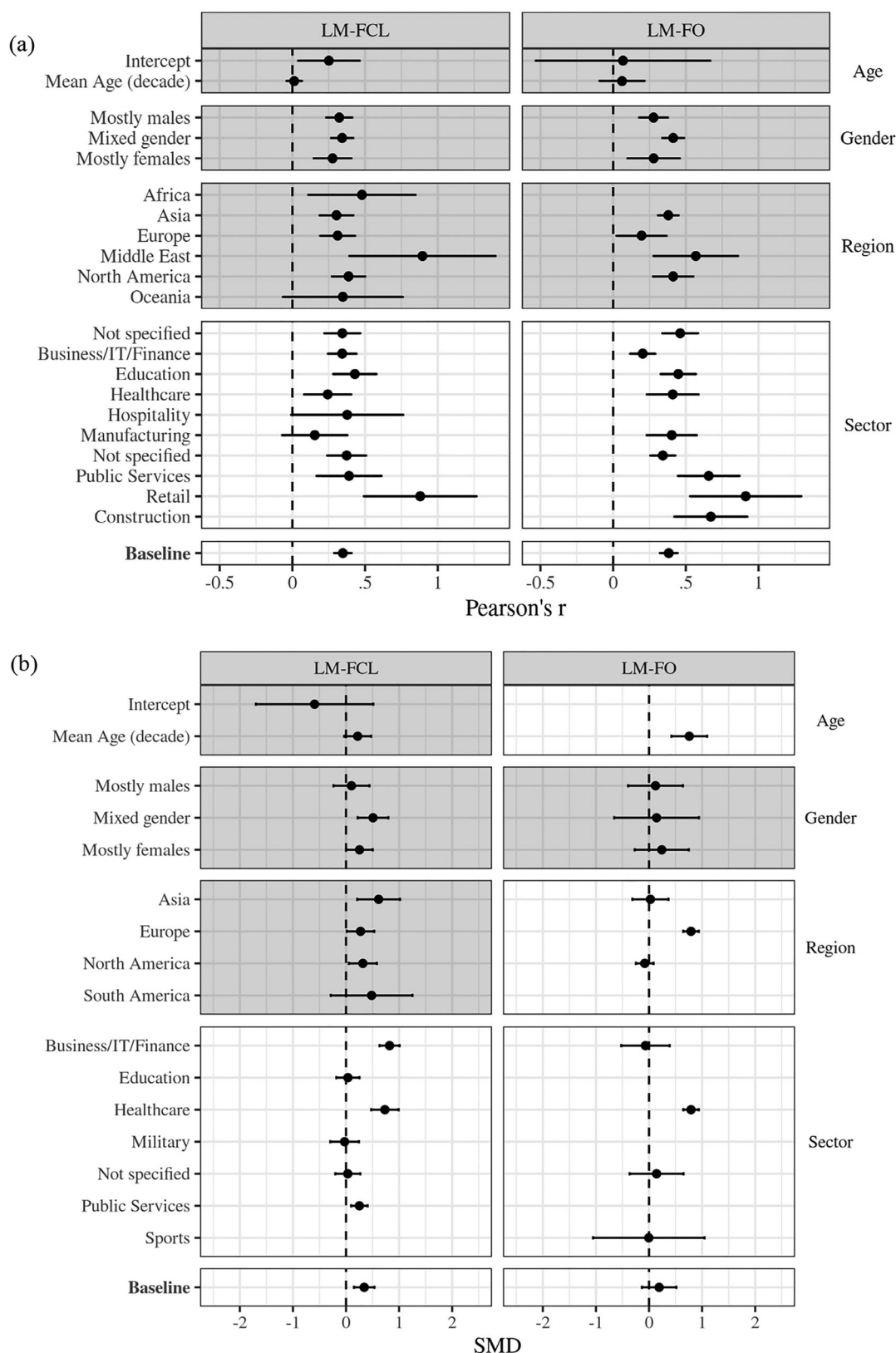


Figure 5. Demographic gaps map for (a) correlational/longitudinal studies and (b) intervention studies. For (a) correlational/longitudinal studies and (b) intervention studies, the univariate paths are listed horizontally, and the four demographic moderators (age, gender, region, and sector) are listed vertically. LM-FCL, leader mindfulness – follower-centred leadership; LM-FO, leader mindfulness – follower outcomes; SMD, standardized mean difference. White cells indicate significant moderation of the demographic factor on the meta-analytic effect; grey cells indicate no evidence of moderation.

Leader mindfulness interventions had medium-sized effects on follower-centred leadership behaviours, particularly authentic leadership, and these effects were broadly consistent across different leader ages, genders, industry sectors, and geographic locations. Further, these effects held when only randomized controlled trial studies were included, suggesting a robust effect.

For H3–H5, our findings show that leader mindfulness is positively linked to follower well-being (H3), performance (H4), and leader–follower relations (H5), with evidence from both correlational (large effects) and longitudinal studies (medium-sized effects). These effects were broadly consistent across different leader ages, genders, industry sectors, and geographic regions. Notably, from correlational studies, the impact of leader mindfulness on follower performance was as large as its effects on follower well-being and leader–follower relations. Whereas prior research has focused mainly on the effects of employee mindfulness on well-being outcomes (e.g. Bartlett *et al.*, 2019; Vonderlin *et al.*, 2020), our review indicates large-magnitude benefits for follower performance outcomes, such as in-role performance, organizational citizenship behaviours, and reduced turnover intentions. Among intervention studies, we found preliminary evidence that leader mindfulness interventions promote follower well-being. Among the three randomized controlled trials that examined follower outcomes, a significant positive effect on follower outcomes was found. Although our risk of bias assessment found mixed study quality among intervention studies, we found no evidence that risk of bias ratings moderated effects, suggesting that the above findings were robust to risks of bias.

### *Theoretical contributions*

Our review contributes to theorizing on the role of mindfulness for leaders in several ways. First, we add to theorizing on the self-regulatory features of leader mindfulness, by drawing on COR theory and SDT. As discussed, our underlying theory of change is that mindfulness enhances both the *quantity* of leaders' self-regulatory resources (drawing on COR theory) as well as the *quality* of leaders' self-regulation (drawing on SDT), enabling more follower-centred leadership approaches. Our review integrates these explanations for why mindfulness enables more follower-centred leadership behaviours, thus advancing theorizing on the role of mindfulness in leadership contexts.

Second, we theorized and found consistent evidence that mindfulness is integral to the development of positive leadership behaviours (i.e., transformational, ethical, servant, and authentic leadership; Hoch *et al.*, 2018). Our findings add to previous work examining the antecedents of positive leadership (e.g. Bommer, Rubin and Baldwin, 2004; Zhang, Zhang and Law, 2022),

by highlighting leader mindfulness as an important antecedent of positive leadership, and a complement to other, more established intra-personal antecedents, such as emotional intelligence and personality traits (Zhang, Zhang and Law, 2022).

Third, we add to recent theorizing on mindful leadership (e.g. Rupperecht *et al.*, 2019; Urrila, 2022; Zhou, Wang and Sin, 2023). Drawing on COR theory and SDT, we propose that follower-centred leadership behaviours explain the link between leaders' mindfulness and salutary outcomes for followers. We found meta-analytic evidence for this via our OSMASEM analysis. Thus, we propose greater 'follower-centredness' as a key mechanism underpinning the interpersonal benefits of mindfulness. This adds to prior theorizing on the role of mindfulness in leadership contexts (e.g., Good *et al.*, 2015). We also extend theorizing within SDT on the interpersonal and prosocial benefits of mindfulness (e.g. Ryan, Donald and Bradshaw, 2021), by considering leadership contexts specifically. Further, our findings extend theorizing within broader mindfulness research on the mechanisms by which mindfulness delivers prosocial benefits to others (e.g., Berry *et al.*, 2020; Condon *et al.*, 2013; Donald *et al.*, 2019).

Finally, there have been calls within leadership scholarship for a richer understanding of how leaders' self-awareness may benefit followers (e.g. Day and Dragoni, 2015; Uhl-Bien and Arena, 2018), including the role of mindfulness (e.g. London, Sessa and Shelley, 2023). Our review adds to this line of research, highlighting mindfulness as an important aspect of leader self-awareness, with benefits for followers. In this vein, we found that two important elements of mindfulness – leaders' present-moment attention, and a non-judgemental and open attitude – each appear to be important 'active ingredients' of leader mindfulness, and its effects on followers.

### *Limitations and future research agenda*

A key goal of this review is to set out an agenda for future research in this domain by highlighting gaps in knowledge that future studies need to address (RQ1), as well as issues with study quality that need attention (RQ2). In Table 4, we summarize the issues and limitations in this review that future research needs to address to advance this field.

*Self-regulatory mediators.* There were insufficient primary studies in this review to test mediators linking leader mindfulness and follower-centred leadership behaviours (i.e., the mechanisms of Path 1 of this meta-analysis). Future studies could test potential mediators of these effects. Of particular value would be testing the relative and joint contributions of the two self-regulatory mechanisms we discuss in this review, namely

Table 4. Priorities for future research on the association between leader mindfulness and outcomes for followers

Priorities relating to knowledge on leader mindfulness (RQ1)	Priorities relating to study quality (RQ2)
<ul style="list-style-type: none"><li>• <b>Self-regulatory mediators.</b> Explore the self-regulatory mediators of the effect of leader mindfulness on follower-centred leadership behaviours.</li><li>• <b>Follower outcomes.</b> Examine the influence of leader mindfulness on follower performance, including organizational citizenship behaviours and counter-productive work behaviours, and follower well-being, including eudaemonic well-being.</li><li>• <b>Relative contribution of leader mindfulness.</b> Consider the contribution of leader mindfulness relative to other antecedents (e.g. contextual factors) in predicting follower-centred leadership behaviours.</li><li>• <b>Contextual moderators.</b> Test whether work context (e.g. work stress or job demands) moderates the influence of leader mindfulness on follower outcomes.</li></ul>	<ul style="list-style-type: none"><li>• <b>Qualitative review.</b> A systematic qualitative assessment of the components and format of mindfulness interventions for leaders, to inform best-practice intervention designs.</li><li>• <b>Intervention design.</b> Mindfulness interventions for leaders need to prioritise the inclusion of a comparison condition, random allocation of participants to conditions, and blinding of participants, raters, and trainers as to participants' condition.</li><li>• <b>Longitudinal design.</b> In longitudinal studies, include (a) auto-regressive effects of the outcome variable, (b) mixed effects modelling where data are nested, (c) control for covariates, (d) use instrumental variables where possible and (e) use latent variables.</li><li>• <b>Sampling.</b> Future studies across all methods should include clear inclusion criteria and avoid convenience sampling.</li></ul>

Note: RQ, research question.

the *quantity* of self-regulatory resources (drawing on COR theory) and the *quality* of self-regulation (drawing on SDT), as mediators. Testing these mechanisms of leader mindfulness across diverse leadership contexts would provide more nuanced insights into how leader mindfulness affects followers.

*Follower outcomes.* While consistent links were observed in correlational studies between leader mindfulness and follower outcomes, further *intervention* research is needed to better understand the causal ordering of these effects. Greater understanding of the effects of leader mindfulness on follower performance outcomes would be especially valuable, as this has received limited attention. In particular, ‘extra-role’ performance indicators, such as organizational citizenship, discretionary effort, and employee creativity, are under-represented in the existing literature and need investigation. Further, regarding follower well-being outcomes, more research is needed on links between leader mindfulness and followers’ *eudemonic* well-being (e.g., resilience, purpose, and prosociality; Marsh *et al.*, 2020), with most studies focusing on indices of *hedonic* well-being, such as affect and stress (see Section S3 in the Supporting Information).

*Relative contribution of leader mindfulness.* While this review highlights the value of leader mindfulness in benefiting followers, future research could consider its *relative* contribution in promoting follower-centred leadership behaviours. For example, does leader mindfulness enhance leadership behaviours independent of leaders’ personality? Or contextual antecedents such as team climate or organizational trust? Relatedly, scholars could further integrate research on leader self-awareness and mindfulness, by examining how elements of mindfulness integrate with, or are independent of, more active

and reflective elements of leader self-awareness (London, Sessa and Shelley, 2023). Exploring these questions would help to situate leader mindfulness in the context of broader leadership research (e.g. Day and Dragoni, 2015; London, Sessa and Shelley, 2023).

*Contextual moderators.* This review found that the links between leader mindfulness and follower outcomes were broadly consistent across different leader ages, genders, industries and geographic regions. Future research could meta-analytically explore additional contextual moderators, such as team climate, psychological safety, trust and organizational culture. Consistent with prior research (e.g., Liu *et al.*, 2021), it may be that certain organizational climates amplify the link between leader mindfulness and positive leadership behaviours, while other climates undermine it.

*Qualitative review.* Given the variation in the quality of intervention study designs (10 out of 20 studies rated as high risk of bias), a qualitative review of leader mindfulness interventions would be valuable. While the meta-analytic findings in this review did not vary as a function of risk of bias ratings, risks of bias are still a threat to the inferences that can be drawn from a study’s findings. As a future direction, a qualitative review of the intervention studies in this field would be valuable to further map the quality of this emerging research domain, building on prior work (e.g., Eby *et al.*, 2019).

*Intervention design.* Of the 20 intervention studies in this review, 6 were randomized controlled trials. Our risk of bias assessment found that 10 out of the 14 non-randomized intervention studies in this review had a high risk of bias rating. This mixed quality in intervention design is a limitation of this literature. Non-randomization limits the inferences that can be drawn regarding causality and is a major driver of endogene-

ity bias (Antonakis *et al.*, 2010). Future studies of leader mindfulness interventions would benefit from prioritizing the random allocation of study participants to experimental conditions, even if this means drawing on less face-valid study samples (e.g., studies with university student leaders), or relatively niche samples (e.g., nurse leaders) that limit the generalizability of findings.

**Longitudinal design.** Of 89 correlational studies in this review, 16 reported longitudinal data. The field would benefit substantially from additional well-designed longitudinal research. This would allow researchers to examine the effects of leader mindfulness over an extended period, and dynamically, in the context of leaders' everyday leadership role, both of which are often very difficult to examine in randomized controlled trial designs. Although longitudinal research is subject to endogeneity risks (Hill *et al.*, 2021), there are several well-established strategies to reduce such risks (see Section S16 in the Supporting Information for further information).

**Sampling.** Finally, our risk of bias assessment revealed that the use of convenience samples was a common limitation across included studies. When a sample is not representative of the population of interest, this limits the inferences that can be drawn from such research (see Hill *et al.*, 2021 for a discussion). Future studies of leader mindfulness should aim to use samples that are as representative as possible of the target population and be explicit about the target population, ideally via clear exclusion criteria for sample recruitment. We note, however, that there is often a trade-off between conducting a randomized controlled trial design and achieving sample representativeness.

### Practical implications

The findings from this review offer several practical implications for organizations, leaders, and followers. First, our results suggest that organizations that recruit and promote leaders who display high levels of mindfulness are likely to see tangible benefits in terms of the sustainability of followers' careers and the success of the organization. Organizations can integrate mindfulness-focused assessments into selection criteria, including capturing both the 'attentional' and 'attitudinal' elements of mindfulness. Assessment centres, referee reports, and structured interviews should explore mindfulness indicators to help select leaders who are more likely to positively influence followers. Further, organizations can consider ways of embedding mindfulness within their organizational culture and leadership practices (Donald *et al.*, 2019). This could involve identifying and reinforcing leadership behaviours that reflect mindfulness (e.g., openness, attentiveness, and non-judgement). These behaviours can be reinforced by daily reminders, communication and activities (e.g.

mindfulness meditation), and even embedded within the organizations' performance and reward structures.

A second important practical implication relates to the finding that leader mindfulness supports authentic, ethical, servant, and transformational leadership behaviours. These attributes have consistently been shown to enhance employee outcomes (e.g. Gutermann *et al.*, 2017; Klebe *et al.*, 2021). Organizations seeking to cultivate these leadership qualities could benefit from embedding mindfulness practices in leadership development programmes. Such training is likely to strengthen leaders' capacity for self-awareness and situational responsiveness, contributing to a culture of ethical and transformational leadership (Xu, Loi and Cai, 2023). However, our review indicates that while mindfulness enhances these positive behaviours, these effects may vary depending on the duration, frequency, and context of training (Bartlett *et al.*, 2019).

A third practical implication relates to the effects of leader mindfulness interventions for followers. To explore whether improvements in follower-centred leadership were the result of specific characteristics of the mindfulness interventions from this review, we examined intervention studies that reported statistically significant improvements in follower outcomes (i.e., Gascon *et al.*, 2022; Ni *et al.*, 2023; Vonderlin *et al.*, 2020). While these studies did not explicitly test whether specific aspects of mindfulness training enhanced follower-centred leadership, we make two general observations about these studies. First, these interventions were carefully contextualized to the participants' field of work (i.e., medicine, Gascon *et al.*, 2022; science and healthcare, Vonderlin *et al.*, 2020; and hospitality, Ni *et al.*, 2023). Second, there was an emphasis on integrating mindfulness into leaders' everyday work, with the formal mindfulness elements of these interventions (e.g., sitting mindfulness meditation) being relatively brief. This is consistent with findings of other reviews of mindfulness interventions in the workplace (e.g., Stuart-Edwards, MacDonald and Ansari, 2023; Urrila, 2022). We therefore recommend that leader mindfulness interventions carefully *contextualize* the intervention to participants' organizational and industry settings and also *integrate* the intervention within participants' established workplace schedules and daily routines.

### Conclusion

In this review, we sought to better understand whether, when, and how leader mindfulness benefits followers. We hypothesized that among leaders, mindfulness facilitates more follower-centred leadership behaviours and enhances outcomes for followers. We tested this model via a systematic review and meta-analysis and found

that leader mindfulness is associated with improved follower well-being, follower performance, and leader–follower relations. These findings were robust across a diverse range of leadership settings, industry types, and research designs. We also found that follower-centred leadership behaviours mediate the link between leader mindfulness and beneficial outcomes for followers. Although the findings of this review should be regarded as preliminary, they indicate that leader mindfulness plays an important role in influencing followers, enhancing their well-being and work performance. At a time when organizations around the world are being disrupted in unprecedented ways, this review suggests that mindfulness is a valuable leadership attribute that has important implications for followers, and for organizations.

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Note: References for the studies included in the systematic review are in the Supporting Information.

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## Supporting Information

Additional supporting information can be found online in the Supporting Information section at the end of the article.