



The effects of self-leadership and mindfulness training on leadership development: a systematic review

Julia Tenschert¹ · Marco Furtner¹ · Mike Peters²

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Abstract

Investment in leadership development programs (LDPs) does not reliably increase leaders' competence in core socioemotional skills related to self-management, self-awareness, and relationship-building with employees. Training programs focused on self-leadership, in combination with mindfulness practices, have the potential to address this gap. However, robust research that assesses the suitability and efficacy of such programs is lacking. In this article, the results of a systematic review of the literature on self-leadership and mindfulness in the context of LDPs are reported. A total of 52 articles were selected from an initial pool of 284 articles, subjected to textual analysis, and coded in terms of the reported impact levels for all of the examined training programs. This study revealed that training in self-leadership competencies and skills improved stress resilience, job performance and satisfaction, and positive attitudes and increased leaders' abilities to organize and motivate their teams. Mindfulness training was strongly linked to stress reduction and self-regulation as well as to enhanced sleep and reduced burnout. Mindfulness also appeared to improve job performance and emotional regulation and to increase the ability to establish positive relationships with employees.

Keywords Self-leadership · Mindfulness · Leadership development · Leadership effectiveness · Leader performance

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✉ Julia Tenschert
julia.tenschert@uni.li

Marco Furtner
marco.furtner@uni.li

Mike Peters
mike.peters@uibk.ac.at

¹ Liechtenstein Business School, University of Liechtenstein, Fürst-Franz-Josef-Strasse, 9490 Vaduz, Liechtenstein

² Department of Management and Marketing, University of Innsbruck, Innrain 52, 6020 Innsbruck, Austria

1 Introduction

The relationship between leadership competence and firm performance is multidimensional, nuanced, and well studied. Employee engagement and motivation are especially important for agile and cross-functional teams (Dusdal and Powell 2021). Furthermore, both factors depend on managerial foresight and leaders' abilities to foster an appropriate social environment (Edmondson et al. 2019). Even senior leaders must maintain emotional and psychological relationships with employees that extend beyond the immediate concerns of the workday (Nowiński and Haddoud 2019; Stokes 2019; Wolor et al. 2022).

The leadership development programs (LDPs) that instill these capacities for both rising and established leaders remain largely unexplored (Subramony et al. 2018). Two promising types of LDPs seek to teach self-leadership and mindfulness since these capacities are relevant to both leader and leadership development (Day 2000; Day et al. 2014). Whereas leader development is intrapersonal and individual, leadership development is interpersonal and relational and focuses on the establishment of mutual commitment, trust, and respect between leaders and team members. Day (2000, p. 583) described leadership as "an emergent property of effective systems design". A useful LDP prepares leaders to maintain positive relationships between themselves and members of their teams (Day 2000). Because of this specific need, self-leadership and mindfulness are highly valuable LDP goals.

Self-leadership is an approach to motivation and responsibility that can be contrasted with external leadership or outside direction. Self-leadership is defined by personal responsibility and initiative, setting and monitoring one's goals, and effectively employing strategies to improve performance or well-being. This construct is positively associated with individual and team performance. Senior leadership appears to play an important role in the development of bonds of trust with and respect for employees (Quinteiro et al. 2016; Yadav and Mishra 2019; Goldsby et al. 2021; Ugoani 2021).

Mindfulness refers to a (complementary) habit of awareness and mental presence regarding one's immediate surroundings. This factor has also been linked to both job performance at all levels and leadership performance in senior positions (Reb et al. 2019; King 2022). Self-leadership and mindfulness are foundational elements of the broader category of "inner" leadership qualities, including self-awareness, emotional intelligence, and intrapersonal skills (Furtner et al. 2018).

Both self-leadership alone and in combination with mindfulness show substantial promise for LDPs designed to help trainees cope with the psychological demands associated with intense, stressful jobs (Furtner et al. 2015, 2018). Substantial evidence indicates that standard training programs that focus more narrowly on job competencies fail to instill in leaders the confidence, equanimity, and resilience necessary to apply their novel skills successfully in the workplace (Allio 2005; Tharenou et al. 2007; Hylton 2021). LDPs that focus on self-leadership are intended to strengthen those qualities and may therefore be useful for addressing the limitations of other types of programs.

The combination of self-leadership and mindfulness is of particular interest. These two constructs share a core of self-regulatory qualities, and both have direct beneficial effects on leader and firm/team performance. By combining the motivational, performance-related, and organizational benefits of self-leadership with the well-being and epistemic benefits of mindfulness, leaders can become more aware of and more able to control their emotions, behaviors, and ideas, which ultimately helps them develop self-awareness that is intrinsically empathetic and action-oriented (Furtner et al. 2018). These mindful self-leaders can consciously choose courses of action that are in line with their values and become more resilient, positive leaders for their teams (Furtner et al. 2015; Sampl et al. 2017).

In light of the evidence described in this article, both self-leadership and mindfulness training programs are emerging as valuable tools for developing more resilient and effective team leaders. Manifestations of these positive effects can be observed from both theoretical and practical perspectives. This combination of these two powerful tools provides an integrated strategy for leadership that fosters an innovative, resilient, and morally sound culture within companies in addition to increasing personal efficiency.

Theoretically, learning about self-leadership and mindfulness training expands our understanding of leadership as a complex and changing process. By combining knowledge from organizational behavior, psychology, and neuroscience, researchers are able to better understand the cognitive, emotional and behavioral processes that underlie effective leadership (Hoffmann 2023), leading to novel theories that consider a more holistic approach to leadership, namely, “inner” and “outer” leadership (Poetz and Volmer 2024). This cross-disciplinary method promotes techniques that are based upon actual investigations and practical implementations in addition to advancing theoretical concepts.

From a practical perspective, learning about self-leadership and mindfulness training provides leaders with the tools they require to successfully overcome the challenges of contemporary leadership positions. Self-leadership encourages independence and self-management during decision-making by enabling people to accept responsibility for their ideas, feelings, and actions. These skills can be successfully taught through self-leadership training programs (e.g., Krampitz et al. 2023). Building self-awareness and self-efficacy helps leaders cope more effectively with stress, adjust to change, and stay focused in the face of distractions (Harunavamwe and Kanengoni 2023; London et al. 2023). This improves their capacity to uplift and encourage people toward common objectives. By helping leaders develop skills regarding nonjudgmental acceptance and being present in the moment, mindfulness training enhances self-leadership (Kelly 2023). Leaders may handle interactions with other people with openness and understanding by cultivating emotional intelligence, empathy, and resilience via mindfulness activities, including meditation and mindful breathing. Additionally, mindfulness cultivates a profound comprehension of collaboration and connectivity and promotes inclusive leadership approaches that place a premium on diversity and cooperation (Doornich and Lynch 2024). Research on self-leadership and mindfulness training adds to continuing discussions about sustainability and ethics in leadership. Leaders who foster introspection and ethical judgment are more competent at resolving moral conundrums and

maintaining integrity in their actions, particularly during stressful situations (Han and Preston 2023). Additionally, mindfulness encourages equitable treatment and responsibility for the environment, which harmonizes leadership techniques with broader goals for environmental and social change.

However, both self-leadership and mindfulness are rarely discussed or studied in corporate contexts. Consequently, a substantial knowledge gap is evident regarding their importance and efficacy (Ugoani 2021; Konte 2022; Lee and Jung 2022). Moreover, currently established leadership development programs remain largely ineffective (Kurniatun et al. 2021).

2 Background

2.1 Implementing self-leadership

The review process employed in the present study relied on a definition of self-leadership that emerged from previous foundational research efforts (Manz 1986; Neck and Manz 1996). These initial theories viewed self-leadership in terms of a set of concepts related to self-possession or control of one's thoughts (Houghton and Neck 2002). This pioneering research was preceded by examining the influence of self-control (Cautela 1969; Mahoney and Arnkoff 1979). Self-control is a construct that pertains primarily to training and habituation and is firmly rooted in clinical psychology. Its outcomes are presented in terms of changes in habitual behaviors. Another avenue of research has focused on self-regulation, particularly regarding background routines, stable habits, and subconscious processes (Kanfer 1970). The use of the term "regulation" is a result of the influence of cybernetics and control theory combined with the resulting focus on inherent mental or cognitive systems that facilitate reflection on or modification of states of mind in light of changing situational requirements (Carver and Scheier 1981).

A third area of research that contributes to self-leadership theory focuses on self-management. This line of research can be differentiated by its emphasis on moral accountability and personal responsibility. Self-management involves the use of managerial tools such as goal setting, evaluations, and incentive structures to improve or modify one's performance in the workplace (Luthans and Davis 1979; Manz and Sims 1980; Andrasik and Heimberg 1982). This line of research emphasizes behavioral psychology and the use of strategies to suppress undesirable behavior.

Currently, several models of self-leadership training are available. These models do not correspond directly to the concept's original theories; instead, they are differentiated by the immediate, practical differences exhibited by the strategies they employ to shift mental habits, thought patterns, and behavioral routines (Manz 1992; Houghton and Neck 2002). Three broad models can be summarized as follows:

- *Behavior-focused strategies* emphasize the need to train individuals in behavioral self-control to prevent adverse behavior while encouraging positive and productive behavior. Examples of behavior-focused strategies include self-monitoring

or observation, setting concrete goals for oneself, quantifying behavioral metrics, and implementing rewards or punishments for particular behavioral outcomes (Politis 2006; Su and Hahn 2022).

- *Natural reward strategies* reinforce the positive elements of a chore or task. These techniques rely on such reinforcement to increase the inner or intrinsic motivation to engage in that task in the future, thereby enhancing behavioral self-control with respect to the desired behaviors (Manz 1992).
- *Constructive thought strategies* focus on recognizing irrational inner convictions that might impede one's personal development and replacing them with constructive mental patterns. Although the analogy is imprecise, these techniques can be compared to the techniques used in therapeutic approaches such as cognitive behavioral therapy (CBT) (Godwin and Hershelman 2021).

These strategies were developed into empirically useful inventories and subsequently validated for use by organizational psychologists and researchers in adjacent fields (Anderson and Prussia 1997; Houghton et al. 2012). A list of relevant inventories is provided in Table 6 ("Appendix 3").

2.2 Implementing mindfulness

In contrast to the roots of self-leadership in clinical psychology, cybernetics, and organizational behavior, the concept of mindfulness originated in Buddhist philosophy and emerged as a popular psychological/spiritual practice in the West (Kabat-Zinn et al. 1987; Gethin 2011; Dhiman 2020). Mindfulness has been implemented for both study and training purposes (Chan et al. 2016; Teixeira et al. 2017; Droutman et al. 2018). In essence, mindfulness is an inner meditative attitude that is conducive to the achievement of a deep state of relaxation, mental clarity, or enlightenment (Cullen 2011).

A full list of definitions of mindfulness obtained from the articles reviewed as part of this study is presented in Table 7 ("Appendix 3"). For the present purposes, however, the contents of that table can be summarized by describing four critical elements linked to the predominant approaches to mindfulness, including the elements that inform and guide LDPs that rely on mindfulness practices. These four elements are as follows:

- *Consciousness*: Mindfulness is (or requires) mental presence and the possession of a state of mind. In this sense, consciousness is the ability to function as an observer of oneself, others, and the outside world and is linked to one's sense of self (Jha et al. 2007).
- *Awareness*: Mindfulness requires mental orientation toward a target, property, or characteristic that is closely related to the Western philosophical concept of intentionality or intentional directedness (Shapiro et al. 2006; Gethin 2011).
- *Attention*: A closely related aspect of mindfulness is attention, which combines direction with alertness, effort, or control of one's mental attitude, resulting in

focusing on or delineation of an object of mental regard (Bishop et al. 2004; Siegel 2007).

- *Openness/Nonjudgment*: The most explicit emotional and normative element of mindfulness practice involves openness toward the object under consideration, whereby the individual avoids any valuation or emotion, particularly habitual or prejudiced reactions (Kabat-Zinn 1994; Jha et al. 2007).

The state of mindfulness and progression toward greater levels of mindful awareness are measurable using validated and empirically reliable instruments (Tanay and Bernstein 2013; Veneziani and Voci 2015; Droutman et al. 2018). The scales that are most relevant to LDPs, self-leadership, and organizational/firm performance are summarized in Table 8 (“Appendix 3”).

The aim of this study was to examine the previous literature through mapping a systematic literature review with a focus on the practical utility of LDPs that emphasize and incorporate self-leadership and mindfulness practices within their programs.

3 Methods

This investigation employed a systematic mapping review following the procedural recommendations of Bichler et al. (2022). This evaluation was conducted to achieve two main goals: to identify gaps in the literature on these topics (Snyder 2019) and to determine the extent to which the current literature supports the use of these methods for leadership training in the corporate context. Following Kraus et al.’s (2022) discussion of best practices for literature reviews as standalone studies, this article presents a domain-focused review (rather than a review focused on a particular theory or method) of a hybrid type that engages with two particular concepts (self-leadership and mindfulness) within the field of leadership development. Consequently, the method employed here is qualitative and relies on thematic content analysis rather than on quantitative or semiquantitative approaches.

The study began with a process of article selection consistent with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and previous studies (Moher et al. 2011; Bichler et al. 2022). Thus, only articles published in peer-reviewed academic journals and conference proceedings written in either German or English with a date range limited to 1990–2024 to ensure relevance in the context of a dynamically evolving field were considered. The Google Scholar, EBSCOhost, WISO, Web of Science, ProQuest, and ScienceDirect databases were queried using the following keyword strings: (1) “Self-leadership” OR “self-leadership training” AND leadership AND [impact OR effect] AND “intervention” and (2) “Mindfulness” OR “mindfulness training” AND leadership AND [impact OR effect] AND intervention.”

These queries returned 284 candidate articles, which were subsequently subjected to automated analysis following the review procedure suggested by Webster and Watson (2002). This led to the removal of 52 duplicate, 51 noneligible, and 50 otherwise inadequate studies. The titles and abstracts of the remaining 131 articles were

manually screened for their relevance to leadership development and/or leadership performance, resulting in the removal of 18 studies. Among the 113 studies identified for retrieval, full-text versions were unavailable for 44 studies. Textual analysis was performed on the remaining 69 studies, resulting in the removal of 17 studies that did not contain novel information. The final pool consisted of 26 articles on self-leadership and 26 articles on mindfulness.

Each of the 52 selected articles was subsequently entered into a content matrix in Microsoft Excel software. In addition to bibliographic information, the matrix included the following data for each study: size and description of the sample/participant pool, evaluation method (e.g., review, quantitative empirical, or qualitative empirical), input variables and definitions (e.g., self-leadership and mindfulness), controlling and mediating variables, target variables, correlations identified (indexed with “+” to indicate a positive association, “-” to indicate a negative association, and “0” to indicate no confirmed impact), and notes for critical reflection (see “Appendix 1”).

The content matrix was then inverted to create a concept matrix that transformed contents into codes, as previously described (Webster and Watson 2002). Each row of the resulting table corresponded to a particular concept or subject, with subconcepts nested under higher-level categories (see Tables 3 and 4, “Appendix 2”). Constructing the table in this manner facilitated the open-ended identification of impact and impact categories rather than relying on predefined codes. Instead, categories emerged inductively during the coding process. A second benefit of this process was that it ensured that all relevant effects of self-leadership and mindfulness were included, which facilitated the classification of the impact into levels based upon contingency relationships among the effects.

The final step of this study focused on textual evaluation and analysis and comprised a descriptive evaluation of relevant information, an outline of contradictions, and a synthesis of the information retrieved. The results of this process are summarized in the following section, where they are organized according to the themes and impacts identified in the concept matrix.

4 Results

4.1 Core concepts

It is first necessary to differentiate self-leadership and mindfulness from a set of related concepts that have frequently appeared in the literature on leadership (complete lists of the definitions and assessment instruments used for both self-leadership and mindfulness appear in “Appendix 3”). Self-leadership overlaps with the concepts of both self-efficacy and self-control (King and Haar 2017; Bracht et al. 2021) and should be viewed as a descriptive rather than normative category (DiLiello and Houghton 2006). In the context of personal development, self-leadership consists of behavior-focused strategies and productivity-related patterns of positive thought (Goldsby et al. 2021; Ugoani 2021; Inam et al. 2023).

Mindfulness is broadly defined as a combination of conscious awareness or attention with openness/nonjudgment (Konte 2022; Urrila 2022). Self-leadership is a well-defined concept (Rau and Williams 2016) that can be understood as an antecedent to self-leadership since self-leadership is possible only for individuals who are sufficiently self-aware and able to observe their own thoughts, ideas, and behaviors (Furtner et al. 2018).

A critical appraisal of these two theories highlights their pragmatic relevance in addition to their theoretical complexity and multivalence. Self-leadership, as a descriptive concept, refers to a bundle of trainable competencies that enable individuals to cope and be organized. It consists of abilities, capacities, and, to a certain extent, particular skills that are of immediate practical and heuristic relevance to managers, leadership trainees, and employees on a daily basis. Consequently, this is not a theoretically unadulterated concept. Any well-formed and evidence-based theory of management or workplace performance necessarily addresses many identical topics and considerations (Markham and Markham 1995; Guzzo 1998).

Although mindfulness is relatively more defined due to its longer history, it has also faced numerous important critiques. Discussing the origins of this concept in spiritual traditions, Grossman (2011) questioned the assumed homogeneity of mindfulness as a state of mind that is available to everyone. While anyone can practice identical mindfulness techniques or training following an identical set of instructions, individual variations in psychology, emotion, and physicality can lead to profoundly different experiences. Grossman (2011) argued that efforts to operationalize the idea within the concept of standardized training suffer from distortion because the concept's original meaning (including subtle, richly nuanced spiritual and emotional elements) is not adequately captured by measurements and scales that assess daily function-oriented experiences, such as simply being attentive or inattentive at a given moment (Grossman 2011).

In the narrower context of mindfulness as an antecedent of self-leadership capacities, however, these contemporary functional accounts have been shown to be useful as the basis for training and assessments concerned with measurable outcomes, namely, efficiency and productivity (Gunasekara and Zheng 2019). Within the scope of this wave of research, multiple distinct (or partially distinct) forms of mindfulness have been reported in the literature. Mindfulness overlaps with several of the "Big Five" personality traits as well as with constructs such as self-regulation, self-efficacy, and the psychological need for achievement (Rau and Williams 2016). These overlaps have not generally been considered to blur the lines between what is and is not a mindfulness practice; instead, they serve as links between mindfulness and related modes of thinking that involve similar abilities and habits. Consequently, mindfulness can be understood as a distinct standalone concept (Furtner et al. 2015) that comprises a set of descriptive nonnormative dimensions that vary among individuals and can be taught. Concerns that this type of operationalized definition of mindfulness does not conform to older, more spiritually grounded understandings of the concept are not barriers to this research tradition. The instruments that have been developed to measure it have been shown to be reliable and consistent across studies, and they remain correlated with a range of relevant outcomes (Brown et al. 2011).

In addition, the overlap between mindfulness and related concepts that are grounded in other intellectual traditions facilitate the identification of interrelations between self-leadership and mindfulness. The features of mindfulness identified above, such as consciousness, awareness, attention, and openness (Kabat-Zinn 1982; Bishop et al. 2004), are closely related to the characteristics of self-leadership, such as self-observation and control, self-motivation, and the formation and use of constructive thought patterns (Furtner et al. 2015, 2018). Mindfulness enhances performance in achievement-focused contexts by fostering emotional control. Similarly, self-leadership enables individuals to maintain cognitive self-control and remain on track even under adverse conditions, such as intense workplace stress (Furtner et al. 2015). Mindfulness meditation improves individuals' competency in self-observation and behavioral control (Hilton et al. 2019), both of which are essential for the development of the competencies that fall under the banner of self-leadership. Collectively, the relationship between these two concepts can be summarized by considering mindfulness to be a precondition or antecedent of self-leadership.

4.2 Effects on leadership performance

Given these definitions, three major categories of impact of self-leadership training on the performance of organizational leaders were identified in this systematic literature search. These categories can be described as reducing perceived stress exposure, improving job-related attitudes, and enhancing leadership competencies and outcomes (Neck et al. 1999, 2003). All three categories add nuance and detail to the previous finding that self-leadership is positively correlated with job performance and therefore has an indirect positive relationship with company performance on a broader scale (Neck and Manz 1992).

In the first of these categories, higher self-leadership substantially increases individual resilience to stress (Unsworth and Mason 2012). LDPs that emphasize self-leadership equip trainees with natural reward strategies, self-observation skills, and thought patterns (such as self-queuing) that support self-control and efficiency, thus allowing them to continue to execute decisions and process information even when they face severe stress (Sesen et al. 2017). Other studies have identified similar effects and have shown that self-leadership increases stress resilience by improving the mediating factors of self-efficacy and positive affect through behavioral and cognitive strategies that include self-talk, constructive imagery, and goal setting (Houghton et al. 2012). In addition, self-leadership mediates organizational commitment by instilling a sense of empowerment in employees. "Empowerment" subsumes several cognitive components identified by other studies, including positive affect and job satisfaction (Stander and Rothmann 2009). This finding has been replicated across multiple workplace contexts (Chaijukul 2010) and firmly links stronger self-leadership to both perceived self-efficacy and job satisfaction, two variables that have intrinsic stress-protective effects (Cabrera-Aguilar et al. 2023). This is also true for the observed ability of self-leadership to effectively balance work with leisure, leading to improved overall satisfaction and reduced stress levels due to a more relaxed lifestyle and

schedule (Cunha et al. 2017). The authors attribute these effects to the “reflexive work” involved in developing and practicing self-leadership, which involves a set of qualities that implicate both awareness and control of one’s habits and predispositions with a resulting indirect but robust link to a balanced lifestyle (Cunha et al. 2017).

The second category focuses on the correlation between higher self-leadership and positive attitudes toward an individual’s job, workplace, and colleagues. Self-leadership has been linked to organizational creativity and the capacity for innovation (Ghosh 2015), as well as the desire for professional achievement and feelings of psychological empowerment (Amundsen and Martinsen 2015). There is a cultural or emergent aspect to these links. Ghosh (2015) specifically noted the importance of a “creativity climate” and “workplace innovative orientation” in addition to individual qualities such as personal creativity. In a context where innovation, values and creativity are encouraged, self-leadership becomes the motivating force that allows individuals to actualize creative thoughts as concrete innovative outcomes (Kalyar 2011). Amundsen and Martinsen (2015) reported a similar dynamic for self-leadership and psychological empowerment with both direct and indirect positive effects. The authors argue that the behavioral and cognitive elements of self-leadership, such as self-talk, self-queueing, and a focus on natural rewards, improve perceived psychological empowerment and increase factors such as creativity and work effort that are also related to empowerment. Other studies have offered a possible explanation for the association between self-leadership and increased innovation by suggesting that self-leadership competencies encourage entrepreneurship, affective commitment, and transformational leadership, all of which improve innovation for both leaders and their teams (Andressen et al. 2012; Kör 2016). Self-leadership has also been reported to be correlated with the positive character traits of conscientiousness, openness, and extraversion, strengthening leaders’ capacity for productive thinking and constructive attitudes toward job-related tasks. The authors of this study also reported that two particular aspects of self-leadership, natural reward strategies and behavioral strategies, account for the majority of its positive effect on job performance (Harari et al. 2021).

Finally, self-leadership has been found to be associated with leaders’ abilities to motivate and organize their teams. Several studies have reported direct associations between self-leadership and improved team collaboration, facilitated mediation in team conflicts, and reduced emotionality during periods of controversy (Quinteiro et al. 2016; Flores et al. 2018). Flores et al. (2018) sought to understand the role of self-leadership as an explanation for why intrateam conflict may either improve or deteriorate team-level decision making. The literature they reviewed revealed that the regulatory benefits for emotions allowed skillful self-leaders to engage with intrateam conflict primarily through ideas and suggestions (rather than interpersonal confrontation), leading to more productive discussions and interactions. Similarly, Quinteiro and colleagues’ study of 103 teams revealed that “team-level self-leadership,” or “the extent to which team members collectively engage in the analysis and debate of beliefs and assumptions, internal dialogs and mental images” (p. 112), was strongly correlated with team-level collective efficacy and helped teams shape tasks, plan processes, and coordinate actions (Quinteiro et al. 2016).

Other studies have reinforced this finding by emphasizing the importance of self-leadership for teamwork in addition to improvements in individual performance, thereby leading to greater group-level productivity (Konradt et al. 2009). Rambe and colleagues examined engineering staff at an underperforming firm and found that behavior-focused self-leadership and constructive thought patterns were the key variables that differentiated productive staff from those with lower job performance (Rambe et al. 2018). Regarding both individual contributors and managers/leaders, self-leadership has an indirect but strong effect on the ability to contribute that is modified through both self-efficacy and specific job-related skills (Singh et al. 2017). Similar studies focused on leaders' perceived self-efficacy, psychological empowerment, job satisfaction, and moral judgment, all of which improve job performance (Politis 2006). Steinbauer et al. (2014), for instance, found that on-the-job judgment quality was dependent upon prejudgement cognitive self-leadership, which promoted accountability and engagement with workplace expectations. In reviews, self-leadership has been associated with improved goal achievement and the constructive, target-oriented organization of thoughts, which can help business leaders remain focused and engaged in job-related tasks (Neck et al. 2003; Lovelace et al. 2007). Self-leadership LDPs have also been found to lead to short-term behavioral changes in the form of increased job efficiency (Cox 1993).

Mindfulness, understood as an antecedent of self-leadership in the context of LDPs, was initially linked to the first and third impact categories described above. The effectiveness of mindfulness practices (such as meditation) for stress reduction has been well supported, and mindfulness training has been found to be effective in preventing stress and instilling constructive attitudes toward affective concerns (Brendel et al. 2016; Mahfouz 2018). Importantly, given the relationship between emotional regulation and job performance, mindfulness is linked to improving the capacity for self-care, self-regulation, and self-reflection, both traditionally and in studies using contemporary operationalized versions of the concept (Sampl et al. 2017; Rupperecht et al. 2019). Other studies have reported similar and complementary effects of mindfulness and have revealed that mindful practices lead to better sleep and lower perceived psychological distress (Bartlett et al. 2019), as well as increased prosocial attitudes and greater relaxation (Meiklejohn et al. 2012). The effects that stem from stress-related mindfulness training persist for prolonged periods, even after the cessation of training sessions (Christopher et al. 2011). While these findings are not limited to the domain of leaders' job performance or competence, they remain critical in that context. Stress is a major factor that contributes to burnout and decreased mental function, both of which significantly impair job performance (Li et al. 2017; Lomas et al. 2019).

These findings are directly related to the second category concerning the impact of mindfulness training, namely, that mindful leaders are more competent and effective at their core job responsibilities (Glomb et al. 2011; Magyari 2015). For example, a study of corporate leaders in Australia reported that, especially for leaders with fewer years of job experience, greater mindfulness predicted leadership self-mastery (a measure that includes both technical and emotional competencies), which consequently predicted leaders' ability to "create and drive change" within their organizations (King and Haar 2017). While this relationship can be summarized by

stating that mindful, stress-resilient, and self-efficacious leaders are likely to perform better on the job, the truth is substantially more nuanced. In addition to leadership self-mastery, some studies have pointed to other mediating factors between mindfulness and measures of efficacy, such as transformational leadership, positive affect, and self-efficacy (Carleton et al. 2018), as is also the case for self-leadership. Crucially, after participating in mindfulness training, leaders perceived themselves as possessing higher self-efficacy, commitment, and role performance levels (Reb et al. 2014; Rupperecht et al. 2019). Among the various components of mindfulness, refined attention skills and nonjudgmental awareness are especially closely related to workplace engagement (Gunasekara and Zheng 2019).

The benefits of mindfulness-focused LDPs extend beyond resilience and on-the-job efficacy and include emotion-related skills with broad positive effects. These LDPs have been found to improve leaders' emotional intelligence and control of their emotions, thereby reducing job-related tension (King and Haar 2017). Similar to studies of self-leadership that show positive effects linked to emotional regulation, mindfulness has been reported to increase trainees' self-efficacy, perceived well-being, and ability to manage their workplace environment effectively (Meiklejohn et al. 2012). Other studies offer further insight by filtering multiple emotion-related aspects of mindfulness. For example, after controlling for employee-related and organizational parameters, mindful leaders exhibit greater levels of empathy and compassion and develop closer and more constructive relationships with their employees (Reb et al. 2014; Lomas et al. 2019). Mindful leaders exhibit greater empathy in their communication styles, which is another factor that contributes to positive workplace atmospheres and leader–employee exchange quality (Arendt et al. 2019). Mindful leaders also report remaining calm more often in situations characterized by uncertainty, a trait linked to stress resilience and self-efficacy (Chesley and Wylson 2016).

In addition to personal-level outcomes, such as improved job performance and stronger emotional skills, mindfulness in leaders has been found to coincide with more positive workplace environments. Specifically, positive emotions and high perceived self-efficacy cause leaders to become more transformational and authentic, enabling them to lead more effectively. As an added benefit, this kind of transformational leadership is strongly correlated with increased employee well-being (Zhang et al. 2020). Multiple studies support this link, with subordinates of mindful leaders reporting higher well-being status and perceiving their work environments as more harmonious, thus increasing employee satisfaction (Saragih et al. 2020). An important aspect of this relationship is that, like many of the positive effects of leaders' self-efficacy, the benefits of leaders' mindfulness include an institutional or workplace-culture component. Saragih et al.'s (2020) investigation of "leader-member exchange quality" revealed that while this quality was improved by leaders' mindfulness, the relationship was mediated by informational and interpersonal justice in the workplace.

The importance of this cultural layer is emphasized by studies in which mindfulness training enables leaders to identify and pursue positive developments in their workplace environments, with effects persisting for as long as 12 months (Wasylikiw et al. 2015; Rupperecht et al. 2019). According to the detailed qualitative work of

Rupprecht et al. (2019), improved mindfulness among leaders leads to many benefits linked to self-efficacy, including self-care, self-reflection, relating to others, and adapting to change. Therefore, increased mindfulness was associated with an approach to leadership that improved overall organizational health, promoted teamwork, and increased team efficacy. Similar to self-leadership, these positive outcomes were mediated by the personal and interpersonal qualities that mindfulness both enables and encourages, such as self-efficacy, positive affect, stress resilience, and emotional intelligence.

5 Discussion

The core findings presented in the previous section are relevant both to the practice of leadership development and the design of LDPs and to ongoing scholarly work in the field. The present review highlights numerous gaps in the literature. The choice of a mapping review rather than a narratively structured review reflected the goal of critically evaluating the full range of previous findings on self-leadership and mindfulness in the context of LDPs.

5.1 Summary of results and analysis of seminal identified studies

Based on a systematic mapping review, this study critically evaluated the extant empirical literature on self-leadership and mindfulness training following the guidelines of Bichler et al. (2022) and PRISMA (Moher et al. 2011). The impacts of different dimensions of leadership competence, particularly self-leadership and mindfulness, on leadership quality and firm performance were evaluated according to previous empirical research, as was the impact of leadership development programs.

- Self-leadership, a method of promoting self-motivation and responsibility, is associated with setting personal goals and improving team performance and is positively related to performance and trust development in senior leadership (Quinteiro et al. 2016; Goldsby et al. 2021; Ugoani 2021).
- Mindfulness, a complementary practice focused on awareness and mental presence, is linked to enhanced job and leadership performance at various levels (Reb et al. 2019; King 2022).
- The proposed impacts of self-leadership on leadership performance through stress reduction, improved job attitudes, and enhanced leadership competencies confirms previous studies (Neck and Manz 1992; Neck et al. 1999, 2003).
- Mindfulness is linked to stress resilience, emotional intelligence, and effective leadership (Brendel et al. 2016; Mahfouz 2018).

Based on this review, seven articles were found to be of seminal importance for highlighting the value of self-leadership and mindfulness practices together with the potential positive impact on leaders when these practice training programs are incorporated within LDPs.

One of the four seminal articles that highlights the importance of self-leadership is the study conducted in 2021 by Goldsby and colleagues. This investigation analyzed previous articles on self-leadership published between 2011 and 2020 and summarized the findings of two other major review articles in the field of self-leadership that were published between 2006 and 2010. The conclusions of this article, which comprehensively spans four decades of previous research on self-leadership, include the proposal of the meta-performance model. This novel paradigm presents self-leadership as an assortment of abilities to improve the personal performance of leaders who pursue growth by way of professional certification programs and carry on that legacy. Professional certification programs and self-leadership are frequently considered independent disciplines. However, the article in question argues that professionals might benefit from integrating other professional development initiatives in combination with self-leadership training (Goldsby et al. 2021).

The seminal investigation conducted by Quinteiro and colleagues in 2016 revealed an additional body of evidence concerning the potential value of self-leadership. This study focused on the multifaceted and complex nature of self-leadership thought practices in the workplace. The authors scrutinized the link between team efficiency (i.e., performance and viability) and self-leadership via collective efficiency from a team-level perspective. In this study, 103 self-management teams (453 people) participated in a 5-week management competition. According to the findings derived from the multilevel confirmatory factor assessment, self-leadership was functionally comparable across all analytical levels (i.e., for both people and teams). Furthermore, through collective efficacy, this investigation revealed an indirect relationship between team-level self-leadership and team efficiency criteria. These outcomes paved the way for future studies on self-managing work teams, expanded upon earlier findings regarding self-leadership and team performance, and offered recommendations to companies that want to encourage teamwork and sustainability among their employees (Quinteiro et al. 2016).

The third seminal article identified through this review that discussed the importance of self-leadership for possible implementation within LDPs was an investigation conducted by Ugoani (2021). The results of this investigation revealed that self-leadership was the fundamental skill that justified the overall level of organizational effectiveness. The findings stress that, to enhance performance and organizational effectiveness, institutions should engage in the systematic development of leadership skills among their managerial cadre (Ugoani 2021).

The proposed impact of self-leadership on leadership performance through stress reduction, improved job attitudes, and enhanced leadership competencies in the seminal work by Neck and colleagues deserves additional emphasis. The Neck and Manz study conducted in 1992 focused on the importance of thought self-leadership and the possible influence of self-talk and mental imagery on personal performance and productivity levels, especially for leaders of organizations (Neck and Manz 1992; Neck et al. 1999, 2003). This study concluded that optimizing cognitive methods for positive thinking management can result in improved performance at both the individual and organizational levels (Neck and Manz 1992). It also established a school of thought that promotes the concept of thought self-leadership, whereby cognitive methodologies that are based on self-dialog, mental imagery or visualization exercises, beliefs

and assumptions can boost individual self-influence, particularly for leaders of organizations (Neck et al. 1999). Following this school of thought, in their 2003 investigation, Neck and colleagues reported that self-leadership practices positively influence the effectiveness of goal setting among leaders who practice thought self-leadership. This was postulated by the suggestion that employees can increase goal-setting abilities (and consequent goal attainment rates) through efficient participative goal-setting behaviors that are augmented by the positive implementation of social cognitive theory methodologies, including the practice of thought self-leadership (Neck et al. 2003).

Regarding the importance of implementing mindfulness in leadership training, three recent seminal studies identified through this review emphasized the value of this essential mental tool for management implementation and effectiveness.

One seminal article on the utility of mindfulness identified in this review was the investigation conducted by Reb and colleagues in 2019, in which the investigators probed the possible links between leaders' mindfulness levels and employees' productivity from the perspective of organizational justice and leader-member interaction. The hypotheses of this investigation were that employees who reported to leaders with an enhanced level of mindfulness practice would have more positive and higher-quality relationships with their leader as perceived by the employees through leader-member exchange (LMX) quality. This hypothesis could also be augmented by two important potential mechanisms, namely, enhanced interpersonal justice (i.e., employees receive an enhanced level of respect from a mindful leader) and minimized employee stress levels. The results of a triadic leader-employee-peer study and a dyadic leader-employee study supported the validity of these hypotheses and suggested that LMX quality can act as a mediator for ascribing levels of leaders' mindfulness implementation with enhanced levels of employees' productivity and performance, as described through in-role and extrarole effectiveness (Reb et al. 2019).

Concerning the links among mindfulness, stress resilience, and effective leadership, the 2016 study by Brendel and colleagues involved a 45-min mindfulness practice protocol for 20 organizational leaders on a weekly basis for a total of 8 weeks to identify the influence of mindfulness on five personal character traits. The results of this pioneering investigation revealed that in addition to exhibiting a substantial decrease in trait anxiety and tension, individuals in the mindfulness practice condition showed a significant increase in regulatory attention. Regarding ambiguity tolerance and resilience, no noticeable shifts were observed. Substantial intercorrelations were also found in this investigation across trait anxiety scores and several other factors, particularly promotional regulatory emphasis (Brendel et al. 2016).

Another seminal study conducted by Mahfouz and colleagues in 2018 evaluated the effect of a specific mindfulness-based professional development course, called Cultivating Awareness and Resilience in Education (CARE), on the leadership and well-being levels of 13 school administrators. The results of this study correlated exposure to the CARE course with enhanced leadership abilities, including heightened introspection, enhanced interpersonal connections, and self-care compliance. Improved self-awareness, self-management, and self-compassion have been correlated with these abilities. Additionally, participants claimed to be better able to identify their emotional responses, which helped them comprehend how their leadership responsibilities influenced the climate of their organizations (Mahfouz 2018).

5.2 Limitations

Despite every effort to avoid issues in this study, several limitations remain. This investigation employed a mapping systematic review approach, which, despite being a useful method for detecting gaps in the literature and synthesizing the available data, is not without limits. First, the likelihood of bias in the selection and inclusion of reviews is a major drawback of mapping systematic reviews (Uttley et al. 2023). To identify pertinent systematic reviews, mapping studies rely on predetermined criteria, which may unintentionally omit certain studies or themes, producing biased or incomplete findings (Shaheen et al. 2023).

Second, standardizing lexicons and methods across many sectors and fields may present difficulties when mapping systematic reviews (Cook 2019). Heterogeneity in mapping studies can be introduced by differences in search strategies, eligibility criteria, and data extraction techniques, rendering it challenging to compare results among reviews and reach firm conclusions (Büchter et al. 2023). Third, the lack of a common language for defining review features such as bias risk or quality assessment standards might make mapping research less transparent and reproducible (Uttley et al. 2023).

Fourth, the likelihood of an outdated or inadequate synthesis of evidence is another drawback of mapping systematic reviews (Uttley et al. 2023). The main data source for mapping studies is previously published systematic reviews, which might not necessarily include the most recent findings or new directions in the field (Petersen et al. 2015). Furthermore, rather than updating or synthesizing new research, mapping studies occasionally concentrate on summarizing previously published evaluations, which might leave gaps or discrepancies in the body of evidence (Munn et al. 2018).

Fifth, evaluating and combining varied data across numerous studies might be difficult when mapping systematic reviews (Bramer et al. 2017). The task of synthesizing information and arriving at significant findings might be complicated by differences in research designs, demographics, treatments, and results across the included reviews (McKenzie and Brennan 2019). Furthermore, when reviews use disparate methodologies or reporting standards, mapping studies may encounter challenges in evaluating the caliber or dependability of the included reviews (Kolaski et al. 2023).

A sixth potential challenge is that this review relied primarily on published literature, which might inherently entail publication bias. Specifically, studies that offer positive findings are more likely to be published, potentially overshadowing research that does not highlight the significant effects of self-leadership or mindfulness on leadership performance. This situation could lead to an overestimation of the effectiveness of these constructs in the context of leadership development.

Seventh, the studies included in the review involved a range of methodologies, sample sizes, and contexts. This heterogeneity might affect the robustness and generalizability of the findings. The results of different studies might not be directly comparable, leading to potential misinterpretation or overgeneralization. Additionally, as discussed above, some aspects of LDPs, such as the impact of organizational culture on the effectiveness of self-leadership and mindfulness training and on the impact of training rather than qualifications or competencies themselves, are not addressed in the primary literature on this topic or are addressed inadequately. These aspects may not have

been explored in depth in the review. This situation leaves a gap in the understanding of how different organizational settings or mindfulness training might influence the adoption of alternative leadership patterns and the business success of these practices.

Eighth, although this review mentions the potential of innovative digital technology in leadership training, it does not explore current digital and technological advancements or their implications for training practice in sufficient detail since studies in the field remain ongoing.

Finally, this review lacks insight into the long-term efficacy and sustainability of self-leadership and mindfulness training in organizational contexts since few longitudinal studies on this topic are available. Future research should investigate the effect of leadership training more directly, such as by examining not only self-leadership, understood as a construct or set of skills but also the measurable, business-relevant outcomes of investments in programs designed to strengthen self-leadership in combination with mindfulness. In particular, future studies should attempt to assess changes in leadership competence, stress resilience, and managerial performance by conducting surveys of employees, using objective indicators of firm performance, and employing other accepted measures. One possibility of particular interest pertains to mindfulness-based self-leadership training. The only extant example of such a training program was described by Sampl et al. (2017); however, that study considered only outcomes related to academic achievement (Sampl et al. 2017).

5.3 Practical implications of implementing self-leadership and mindfulness training within leadership development programs

The use of self-leadership and mindfulness training in leadership development has many real-world applications that could enhance overall productivity, employee well-being, and organizational success. Organizations may cultivate a culture of ethical leadership, resilience, and constant evolution by incorporating these principles into their leadership development programs. As discussed above, training in self-leadership and mindfulness gives leaders the critical abilities they need to negotiate the intricacies of contemporary work contexts. Goal setting, self-monitoring, and self-reinforcement are examples of self-leadership practices that help leaders become more adept at time management, task prioritization, and staying focused in the face of distractions (Steinmann et al. 2018). In a similar vein, leaders may improve their ability to lead with clarity, calmness, and authenticity by developing present-moment awareness, emotional intelligence, and stress resistance via mindfulness activities (Issac et al. 2024).

The cultivation of an innovative, cooperative, and trusting corporate culture is facilitated by self-leadership and mindfulness training. Organizations may establish a work atmosphere where employees feel appreciated, empowered, and inspired to put out their best efforts by giving leaders the freedom to set a good example and promote psychological safety within their teams (Edmondson 2004). Furthermore, mindfulness techniques encourage innovation, flexibility, and open-mindedness, which supports a culture of lifelong learning and acclimatization to change (Loucks et al. 2022). Additionally, there are noticeable advantages for workers' happiness and well-being when self-leadership and mindfulness training are included in leadership

development programs. Leaders who put their own health and well-being first set a good example for their teams, encouraging them to follow suit with good work habits and self-care routines (Steinmann et al. 2018). Furthermore, mindfulness training decreases stress, anxiety, and burnout in managers and staff, which improves work satisfaction, engagement, and retention in businesses (Slutsky et al. 2019). Investment in self-leadership and mindfulness training for leadership development has long-term benefits for organizational sustainability and performance, as seen from a strategic standpoint. Leaders who place a high value on self-awareness, emotional intelligence, and moral judgment are better able to handle difficult situations, encourage creativity, and lead tactical projects that support company objectives (Ikart 2023). Additionally, mindfulness exercises foster a feeling of social responsibility and interconnection, which encourages moral leadership behaviors that prioritize the welfare of team members, stakeholders, and the general public (Patel and Holm 2018).

Overall, there are many reasons to use self-leadership and mindfulness training in leadership development, from improving individual performance to fostering a healthy workplace culture and aligning strategy with long-term objectives. Organizations can cultivate leaders who are ethical, inventive, and resilient and can promote long-term success and the welfare of all stakeholders by incorporating these strategies into their leadership development programs.

5.4 Recommendations for practice

The insights obtained from this systematic literature review offer valuable recommendations for business practices, particularly in the fields of leadership development and organizational performance enhancement. Organizations should prioritize the inclusion of self-leadership and mindfulness training in their LDPs. The evidence suggests that these competencies are crucial for enhancing leadership effectiveness and organizational performance. Incorporating training modules that focus on self-awareness, emotional regulation, and personal responsibility can be beneficial (Goldsby et al. 2021; Ugoani 2021).

It is important for organizations to customize their LDPs to suit their specific cultural and operational environments. This task involves considering the unique challenges and needs of their workforce and adapting the training accordingly. Customization ensures that the training is relevant and resonates with the participants, thereby enhancing its effectiveness (Stander and Rothmann 2009; Ghosh 2015).

Businesses should encourage regular mindfulness practices among both leaders and employees. This goal can be achieved through organized sessions such as meditation programs, workshops on mindfulness techniques, or the integration of mindfulness exercises into daily routines. The cultivation of mindfulness has been linked to improved job performance, stress reduction, and enhanced leadership capabilities (Kabat-Zinn et al. 1987; Magyari 2015).

Creating a culture of continuous learning and self-development can further enhance the efficacy of leadership training. Encouraging leaders to engage in self-reflection, goal setting, and self-monitoring activities can foster a self-leadership mindset. This self-improvement culture is consistent with the core principles of

self-leadership and can lead to improved decision-making and personal accountability (Manz and Sims 1980; Harari et al. 2021).

Implementing mechanisms to monitor progress and provide feedback on the development of self-leadership and mindfulness skills is crucial. These mechanisms could involve regular assessments, feedback sessions, and reflective practices that can help leaders track their growth and identify areas for improvement. These types of mechanisms can ensure that the training results in tangible changes in behavior and leadership style (Cox 1993; Sesen et al. 2017).

Organizations should establish an environment that supports the practice and application of self-leadership and mindfulness skills. This task includes providing the resources, time, and support that are necessary for leaders to engage in these practices. A supportive environment not only facilitates learning but also encourages the application of these skills in real-world scenarios (Neck and Manz 1992; Furtner et al. 2015).

Senior leaders and executives should act as role models with respect to practicing and advocating for self-leadership and mindfulness. Their commitment to these practices can inspire others within the organization and establish a culture that values and prioritizes these competencies (Goldsby et al. 2021; Ugoani 2021).

Organizations should also consider leveraging technology to enhance their leadership training programs. Digital platforms, virtual reality, and online resources can provide accessible and flexible options for training in self-leadership and mindfulness. These factors are especially relevant in the context of remote work and the corresponding increasing reliance on digital solutions in the workplace (Du Plessis 2019; Krampitz et al. 2021).

By implementing these recommendations, businesses can harness the benefits of self-leadership and mindfulness, leading to improved leadership capabilities and overall organizational performance. These practices not only benefit individual leaders but also contribute to the development of a more resilient, adaptable, and effective workforce.

5.5 Future research

The literature reviewed in this article suggests a strong positive connection between leadership training grounded in self-leadership and mindfulness, with concrete firm-level results related to improved leadership performance. However, it also clarifies where current understanding in the field is lacking, what questions remain unanswered (as practitioners seek to identify best practices for LDPs), and where future research might focus most productively. Collectively, these issues can be grouped into the category of open questions in the field of leadership development training.

First, it is helpful to note the variety of research designs that are underrepresented or simply absent from the studies identified in this systematic review. Longitudinal studies would allow researchers to observe the development of these skills over time and their continuous impact on leadership effectiveness, firm performance, workplace culture, professional success, and the development of other employees into leaders in their own right.

Second, intervention studies utilizing experimental methodologies were largely missing from the field at the time of writing. Empirical work is limited primarily to observational methods, such as the use of questionnaires, semistructured interviews, and psychological assessments. Robust experimentation, especially the application of randomized controlled trials (RCTs) to LDPs focused on self-leadership and mindfulness capabilities, would allow for a much clearer and more persuasive account of how such training can contribute to corporate performance (Quinteiro et al. 2016; Goldsby et al. 2021). A closely related concern is that the work conducted thus far has varied widely in its setting and subjects, from university students to primary school teachers, athletes, low-level employees, and middle managers. If resources are to be invested in an RCT, the study's setting must reflect the types of workplaces for which the findings will be of greatest practical relevance.

Third, the second set of open questions concerns particular understudied topics related to self-leadership and mindful LDPs. Among these is that while the positive correlations between self-leadership, mindfulness, and leadership performance are evident, the mechanisms underlying these correlations remain unclear. Future research should explore the mediating and moderating variables that influence this relationship to a greater extent than has been achieved thus far, with a special focus on the psychological constructs identified here as most likely to be relevant, such as stress resilience, emotional intelligence, cognitive flexibility, positive affect, and self-efficacy.

Similarly, there are many extant models for LDPs that may or may not focus on self-leadership and mindfulness. If the field is to offer actionable recommendations to business leaders, it is vital that future efforts compare the effects of these models and examine the impact of duration and structure, teaching methods, and course content, among other variables. Future studies could also probe the efficacy of various self-leadership and mindfulness training delivery formats and modalities in the context of leadership development. Research comparing the effectiveness of online courses, coaching sessions, in-person workshops, and blended learning approaches may be used to determine which approaches are most scalable and successful in providing training to leaders in a variety of organizational settings and situations. Furthermore, studies could examine how organizational support systems, such as peer mentorship, leadership coaching, and organizational culture programs, help leaders maintain and strengthen their practices of self-leadership and mindfulness. Such research would be invaluable for organizations seeking to select and design training programs tailored to their specific needs (Manz 1992; Houghton et al. 2012).

Fourth, researchers should also investigate how cultural norms and organizational structures impact the adoption and effectiveness of these training programs. This line of inquiry is particularly pertinent in the context of an increasingly globalized and diverse workforce (Furtner et al. 2015; Krampitz et al. 2021), as is another understudied topic: the role of technology in enhancing self-leadership and mindfulness training in LDPs. Studies on the use of virtual reality, gamification, and digital platforms could provide insights into innovative and scalable training methods. Such research is especially relevant in the context of remote work and digital transformation in organizations (Cox 1993; Du Plessis 2019). Fifth, this context requires the timely examination of issues that impact the scalability of LDPs that focus on self-leadership and mindfulness. Research should examine the challenges and strategies

associated with implementing these programs at various scales and across differing organizations. This task includes evaluating cost-effectiveness, measuring the impact on organizational culture, and assessing the adaptability of programs across differing leadership levels (Neck and Manz 1992; Sesen et al. 2017). Sixth, research on the synergistic impact of coaching, mentorship, feedback systems, organizational change efforts, and self-leadership and mindfulness training can provide insight into the best practices for developing organizational resilience and excellence in leadership. Additionally, studies should examine how individual variations in leadership styles, cultural backgrounds, and personality features affect the success of self-leadership and mindfulness practices as well as how treatments might be modified to accommodate a range of requirements and preferences.

Finally, research on the effects of self-leadership and mindfulness training on leadership development in developing contexts such as virtual leadership, global teams, and remote work environments may be conducted in the future. Research investigating how leaders can modify self-leadership and mindfulness techniques to successfully overcome the distinct obstacles and possibilities brought about by digitalization, globalization, and telecommuting can provide significant perspectives on future-proofing leadership development programs and cultivating inclusive, resilient, and flexible leadership approaches in the digital era.

Further investigation into the application of self-leadership and mindfulness training in leadership development has significant potential for advancing leadership theory and practice, improving organizational efficacy, and fostering workplace well-being. By investigating these paths, academics may make valuable contributions to the continuous advancement of leadership development methodologies and enable leaders to prosper in a world that is becoming more intricate and unpredictable.

6 Conclusion

Although a tremendous amount of work remains to be done to advance the understanding of self-leadership and mindfulness as techniques for effective leadership, this systematic review makes it clear that they are useful and readily available tools for leadership improvement. The studies reviewed here document widespread positive outcomes, from improvements in both leaders' and employees' self-leadership and mindfulness to outcomes mediated by numerous other constructs, from self-efficacy to positive workplace environments and relationships, creativity, and emotional regulation. Many of these mediating constructs and qualities are well studied in the context of leadership development, and this rich background lends further support to the broad conclusions presented here.

Appendix 1

See Tables 1, 2.

Table 1 Empirical studies on the influence of self-leadership on stress management and performance among leaders

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
2015	Amundsen and Martinsen	Structural equation modeling Two studies conducted among employees (n = 233, and 166)	Self-leadership, empowering leadership	Employee job satisfaction, employee empowerment, creativity, engagement	<ul style="list-style-type: none"> • Empowering leadership (+) employee empowerment and thus self-leadership • Empowerment (+) job satisfaction and engagement but not creativity • Self-leadership (+) engagement and creativity but not job satisfaction 	Self-leadership refers to employee capability
2012	Andressen et al.	Self-leadership as part of a more comprehensive leadership model	Self-leadership (virtuality)	Transformational leadership, work motivation, self-efficacy, work performance, affective commitment	<ul style="list-style-type: none"> • Self-leadership mediates the relationship between transformational leadership and employee motivation • Self-leadership mediates the relationships between work motivation and both job satisfaction and affective commitment • Self-leadership (+) transformational leadership 	Too many factors, not all interrelations determinable
2010	Chaijuikul	577 employees of a Bangkok-based company	Self-leadership, psychological empowerment	Self-efficacy, job satisfaction, work performance	<ul style="list-style-type: none"> • Self-leadership (+) transformational leadership 	–

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
1993	Cox	Super leadership training involving 70 leaders and 500 employees Immediately after training and 10 weeks later	Self-leadership training	Self-leadership behavior	The training was successful immediately after training, but the benefits were lost after 10 weeks	Training focus is informative
2018	Flores et al.	Thesis	Cognitive conflict (emotional self-leadership)	Quality of decision-making	Emotional self-leadership improves decisions	No empirical evidence Self-leadership plays (only) a mediating role
2013	Furtner and Hiller	374 professionals with leadership experience	Self-leadership and motivation	Behavior-focused strategies, natural reward	Self-leadership: (+) self-efficacy (+) hope for success (+) natural reward (+) constructive thought strategies	Hypothetical models, realistic motivation constructs
2015	Ghosh	Employees of India-based companies Structural equation modeling	Self-leadership	Creativity Innovativeness in the workplace Creative working atmosphere	Employee creativity: (+) behavioral orientation (+) natural reward (+) constructive thoughts (+) creative work atmosphere Innovativeness: (+) creative work atmosphere	Subfactors of self-leadership not confirmed as an overall construct

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
2021	Harari et al.	111 participants Meta-analysis Employees	Self-leadership (Personality traits) (National power distance)	Work performance Self-efficacy Attitudes toward work	<ul style="list-style-type: none"> • Diligence, openness, extraversion, transformational leadership (+) self-leadership • Self-leadership (+) productive thinking, attitudes, and behavior 	–
2012	Houghton et al.	Management students Qualitative	Self-leadership (Positive affect) (Self-efficacy)	Emotional intelligence Stress management	<ul style="list-style-type: none"> • Self-leadership (+) stress management • Moderators confirmed 	No valid results
2023	Inam et al.	Communication sector employees (n = 318) Pakistani Structural equation modeling	Self-leadership (Engagement) (Normative commitment)	Commitment to work Commitment to organization Work performance	<ul style="list-style-type: none"> • Self-leadership (+) all target variables • Moderators significant 	Good: considers boundary conditions
2016	Kör	404 bank employees Structural equation modeling	Entrepreneurial orientation (Self-leadership)	Innovative work behavior	<ul style="list-style-type: none"> • Entrepreneurial orientation (+) innovativeness • Self-leadership plays a positive mediating role • Self-leadership mediates perceptions of entrepreneurial orientation 	Self-leadership plays (only) a mediating role

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
2009	Konradt et al.	Team members, hierarchical linear modeling, 40 teams (n = 310)	Self-leadership (Motivational processes) (Autonomy, tasks, intrateam processes)	Motivation, satisfaction, performance	<ul style="list-style-type: none"> • Self-leadership (+) performance of individual team members • Mediators: self-efficacy, instrumental-ity (-) Performance: relationship and tasks conflicts	-
2015	Lucke and Furtner	130 soldiers; 80 soldiers (control group)	Self-leadership training	Self-efficacy, stress, increased performance	Self-leadership (+) self-efficacy (-) strain, stress	Large sample, written and physical exams
2006	Politis	304 employees of a manufacturing company in Australia engaged in self-management tasks	Self-leadership behavior-focused strategies	Job satisfaction	<ul style="list-style-type: none"> • Self-leadership (+) job satisfaction • Satisfaction (+) work performance • Job satisfaction positively mediates the relationship between self-leadership and performance 	-
2017	Pina e Cunha et al.	Interview-based survey on the self-leadership construct	Self-leadership	-	<ul style="list-style-type: none"> • Self-leadership ability to manage duality: • Reorientation/routine • Self and others • Work and leisure time • Mind and body 	The definition of the input variable differs from the definitions used in other studies

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
1998	Prussia et al.	151 students	Perceived self-efficacy (self-leadership competencies)	Work performance	Self-leadership mediates the relationship between self-efficacy and work performance	–
2016	Quinteiro et al.	103 self-management teams (n = 153) participating in a management competition Regression	Perceived self-leadership of the team and the individual (collective efficacy, control variables on the team)	Team efficacy	<ul style="list-style-type: none"> Individual self-leadership corresponds with team perceptions Self-leadership (+) team efficacy Collective efficacy plays a mediating role Self-leadership and locus of control are independent These factors have mutual positive effects on work performance 	–
2018	Rambe et al.	107 engineers & technicians working for a South African-based company (Eskom)	Self-leadership Locus of control	Work performance	<ul style="list-style-type: none"> Self-leadership (+) all target variables Natural reward plays a moderating role Self-reward or self-punishment has no moderating effect 	–
2017	Sesen et al.	440 high school teachers in different cities	Self-leadership (reward strategy, demographic factors)	Job satisfaction, organizational commitment, innovation	<ul style="list-style-type: none"> Self-leadership (+) all target variables Natural reward plays a moderating role Self-reward or self-punishment has no moderating effect 	Self-leadership not confirmed as a homogeneous construct
2024	Shukla and Shaheen	Survey study; 384 gig workers	Self-leadership	Job performance, organizational support, job commitment	<ul style="list-style-type: none"> Self-leadership increases job performance, mediated by organizational support and job commitment 	Focus on freelancers/gig workers; limited generalizability to traditional corporate settings

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
2017	Singh et al.	305 sales employees from US-based pharmaceutical companies	Perceived self-leadership (self-efficacy, competencies, individual behavior)	Efficacy	<ul style="list-style-type: none"> Perceived self-leadership (+) sales success Self-efficacy plays a positively mediating role 	Depiction of a complete short list of SL types
2009	Stander and Rothmann	209 employees in South Africa	Leader's empowerment behavior	Job satisfaction, employees' organizational commitment	<ul style="list-style-type: none"> Empowering (+) job satisfaction and commitment 	Self-leadership as a construct not used directly
2014	Steinbauer et al.	101 students at a leadership university	Ethical leadership Employee responsibility	Self-leadership, ethics and moral judgment	<ul style="list-style-type: none"> Ethical leadership (+) Self-leadership (+) moral behavior 	-
1996	Stewart et al.	113 leisure industry employees: training group (n = 59), control group (n = 54)	Self-directed conscientiousness and self-leadership training	Personality traits	Self-directed behavior: (+) "Big five" personality traits, conscientiousness (-) Self-leadership	Questionable validity
2012	Unsworth and Mason	128 participants in a self-leadership training program (academics) with a control group before/after	Self-leadership training	Self-efficacy, positive affect, stress levels	<ul style="list-style-type: none"> Self-leadership training (+) self-efficacy, positive affect Stress levels 	-

Table 1 (continued)

Year	Author	Methodology	Input variables (Moderators)	Target variables	Correlations	Criticism
2006	Yun et al.	440 employees across 75 working groups	Empowering leadership, directive leadership, employees' need for autonomy	Employee self-leadership	<ul style="list-style-type: none"> Empowering leadership is more effective when the need for autonomy is high Self-leadership benefits from employees' need for autonomy 	Self-leadership used as a target variable

Authors' own illustration

Table 2 Empirical studies on the influence of mindfulness on stress management and performance among leaders

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2019	Arendt et al.	34 leaders and 98 employees drawn from various organizations (hierarchical linear regression)	Mindfulness	Social relations at work	Mindfulness: (+) communication style (+) employee satisfaction	Small sample
2019	Bartlett et al.	Meta-analysis of 24 studies	Mindfulness training in the workplace	Perceptions of stress Anxiety Mental disorder Well-being	Mindfulness training: (-) stress, anxiety, disorder (+) well-being	Comparability of meta-analytical results
2016	Brendel et al.	41 (21 test/20 control) (Serial mediation analysis)	Mindfulness training	Leadership skills: creativity, resilience, tolerance for ambiguity, anxiety, and stress	Training: (+) regulatory competence (-) anxiety, stress, (0) resilience, tolerance for ambiguity	Small sample; too many test variables
2024	Buckley and Sipe	Prospective longitudinal design	Brief mindfulness intervention	Perceived stress levels among volunteer nurse leaders	Mindfulness intervention: (-) perceived stress among volunteer nurse leaders post-intervention	Small sample; short-term study
2018	Carleton et al.	183 leader-member dyads (Serial mediation procedures)	Mindfulness as a character trait Mediators: positive effect and high self-efficacy	Mindfulness Transformational leadership skills Perceived self-efficacy	Self-efficacy: (+) mindfulness (+) positive effect Transformational leadership: (+) mindfulness (+) self-efficacy beliefs	Subjective evaluation by employees, if applicable

Table 2 (continued)

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2016	Chesley and Wylson	19 leaders in change processes (Interviews)	Mindfulness	Dealing with ambiguity Interacting with others Offering perspectives Emotionally empathizing with others Self-awareness Self-care	Mindfulness: (+) self-care (+) acceptance of others (+) support for employees (+) taking advice from others (+) higher empathy (+) higher coaching activity (+) commitment to employees	Low number of cases; purely interview-based
2011	Christopher et al.	Consultants and psychologists (16 Interviews)	Mindfulness training	Self-care practices Personal cognitive, emotional, and interpersonal well-being	Training: (+) target variables 13 continuing practices	No representative results
2011	Geschwind et al.	130 (64 test/66 control) adults with depression (Regression)	Mindfulness-based cognitive training	Positive emotions Use of natural rewards in everyday life	Training: (+) positive emotions (+) enjoyment of the activity (-) symptoms of depression	No leaders
2019	Gunasekara and Zheng	130 employees	Mindfulness	Commitment at work Moderator: focus on the present Attention	Mindfulness (+) commitment to work Moderators (+)	Good: Mindfulness scale and commitment to work scale revealed

Table 2 (continued)

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2024	Higgs and Rowland	63 leaders from 56 organizations (Qualitative interviews)	Leader mindfulness levels	Leader behaviors in change implementation	Higher mindfulness levels correlate with increased facilitating and engaging behaviors in leaders	Limited sample size and qualitative nature may affect generalizability; relies heavily on self-reported data
2017	King and Haar	84 Australian leaders (Assessment by their leaders)	Mindfulness	Leadership self-mastery Organizational transformation through leadership	Mindfulness: (+) leadership self-mastery (+) transformation Moderator: (-) Seniority	–
2019	Lomas et al.	Meta-analysis of studies involving a total of 2,101 health care employees	Mindfulness-based interventions	Negative mental conditions Well-being	Mindfulness-based interventions: (-) anxiety, depression, stress (+) satisfaction, emotional intelligence	Comparability of targets critical
2018	Mahfouz	13 school principals (Interviews)	Cultivating awareness & resilience in education	Self-reflection Self-care Self-awareness Self-management Self-compassion	CARE training: (+) all target variables (+) socioemotional development	Nonrepresentative Only self-reflection
2012	Meiklejohn et al.	14 studies on mindfulness training among K-12 students and teachers	Mindfulness training (different student programs)	Work performance Self-competence Mental problems	Mindfulness training: (+) learning memory, attention, academic and social skills Emotion regulation, self-respect: (-) anxiety, stress, fatigue	No statistical results, more descriptive

Table 2 (continued)

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2011	Piet and Hougaard	Meta-analysis of five studies based on 593 datasets Depressive patients	Mindfulness-based cognitive therapy training compared to placebo	Risk of depressive relapse	Mindfulness: (-) Decrease in the risk of relapse by 34–43%	–
2014	Reb et al.	96 leaders and their employees	Mindfulness of leaders	Mental well-being, employee performance	Mindfulness: (+) job satisfaction (mediating) (+) role performance (-) undesirable employee behaviors (-) emotional exhaustion on the part of employees	–
2019	Reb et al.	Leader-member dyads/triads, two studies (n = 76, 88)	Mindfulness of leaders	Employee performance; mediators: leader-member exchange quality, interpersonal justice, employee stress	Leader-mindfulness (+) Leader-member exchange quality Mediators: leader-member exchange, employee stress	–
2014	Roche et al.	205 CEOs, 183 middle managers, 202 junior managers, 107 entrepreneurs	Mindfulness	Mediator: psychological capital (hope, self-efficacy, resilience, optimism) Well-being	Mindfulness: (-) dysfunctional effects: anxiety, depression, negative feelings, burnout (+) psychological capital	Difference between target audiences?

Table 2 (continued)

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2012	Roeser et al.	Mindfulness training for teachers	Mindfulness training	Habits of mind, occupational health, well-being, creativity, positive student relationships	–	No causal-analytical results
2010	Ruedy and Schweitzer	Impetus of ethical action; two subgroups: high vs. low levels of mindfulness 97 university students	Mindfulness (MAAS Scale)	Significance of moral identity, ethical decision-making (consequentialism, formalism), unethical behavior (lying)	Mindfulness: (+) ethical operational intent (–) intentions to lie (+) formal ethical behavior	Subjective self-evaluation possible
2019	Rupperecht et al.	13 leaders with mindfulness training in six companies, semi-structured interviews	Workplace mindfulness training	Self-leadership, leadership capabilities	Workplace mindfulness training: (+) mindful task management (+) self-care (+) self-reflection (+) self-leadership (+) leadership competence (+) teamwork and business success	Not representative
2017	Sampl et al.	Students: 109 participants vs. 109 controls	Mindfulness-based self-leadership training (10 weeks)	Perceived stress, exam anxiety, self-efficacy, exam performance	Training: (+) improved exam performance (+) stable stress levels	–

Table 2 (continued)

Year	Author	Sample (Methodology)	Input variables (Moderators)	Target variables	Correlations	Criticism
2020	Saragih et al.	413 employees engaged in customer contact at pharmaceutical companies in Malaysia	The mediating influence of organizational justice and leader-member exchange quality	Mindfulness	Leader-member exchange quality (+) leader mindfulness (+) perceived organizational justice	Focus on leader-member exchange
2024	Urrila and Mäkelä	62 leaders (Qualitative study)	8-week mindfulness program	Social awareness (cognitive changes, emotional regulation, behavioral changes)	Mindfulness program: (+) social awareness (+) perspective taking (+) self-regulation (+) sharing behaviors	Qualitative study; richer investigation but may lack generalizability
2015	Wasylikiw et al.	11 health care middle managers, control groups (n = 10)	Mindfulness training (retreat and webinar)	Leadership effectiveness	Leadership-effectiveness: (+) mindfulness training Problem: preservation of mindfulness	Sample size too small
2020	Zhang et al.	56 leaders and 275 employees across two Chinese companies	Mindfulness on the part of leaders and employees	Mediator: authentic leadership Moderator: leader mindfulness	Authentic leadership: (+) follower mindfulness (+) follower tenure (+) follower and leader mindfulness Well-being: (+) authentic leadership (+) leader mindfulness	Novel focus on follower mindfulness

Authors' own illustration

Appendix 2

See Tables 3 and 4.

Table 3 Empirical studies on the effects of self-leadership

Category	Subcategory	Source
Stress resilience	Stress management	Houghton et al. (2012)
	Increase in resilience/reduced perceived strain/stress	Lucke and Furtner (2015)
	Reduction in stress levels	Unsworth and Mason (2012)
	Nervousness (decreased negative affect)	Neck and Manz (1996) on thought self-leadership
Attitudes toward work	Job satisfaction	Amundsen and Martinsen (2015)
		Andressen et al. (2012) on the mediating role of self-leadership
		Chaijukul (2010)
		Neck and Manz (1996) on thought self-leadership
		Politis (2006)
		Sesen et al. (2017)
		Stander and Rothmann (2009) on empowering leadership
		Furtner and Sachse (2011)
		Cox (1993)
		Kör (2016) on the mediating role of self-leadership
Intrinsic motivation	Measured self-leadership behavior	Amundsen and Martinsen (2015)
	Entrepreneurial orientation	Neck and Manz (1996) on thought self-leadership
	Engagement	Andressen et al. (2012) on the mediating role of self-leadership
	Enthusiasm (positive affect)	Andressen et al. (2012)
	Affective commitment	Andressen et al. (2013)
	Transformational leadership	Harari et al. (2021) on the reverse effect
		Furtner et al. (2013)
		Chaijukul (2010)
		Cunha et al. (2017)
Transactional leadership	Psychological empowerment	
	Overcoming duality	

Table 3 (continued)

Category	Subcategory	Source
Work result	Self-efficacy	Chaijukul (2010) Unsworth and Mason (2012)
	Creativity	Amundsen and Martinsen (2015) DiLiello and Houghton (2006) Ghosh (2015)
	Conscientiousness	Stewart et al. (1996)
	Innovativeness	DiLiello and Houghton (2006) Ghosh (2015) Kör (2016) on the mediating role of self-leadership
	Quality of decision-making in conflicts	Flores et al. (2018)
	Team performance	Komradt et al. (2009)
	Team efficacy	Quinteiro et al. (2016)
	Productive thinking and conduct	Harari et al. (2021)
	Work performance	Chaijukul (2010) Rambe et al. (2018) Polittis (2006) indirectly through satisfaction Prussia et al. (1998) indirectly through self-efficacy Shukla and Shaheen (2024)
	Mental performance	Neck and Manz (1996) on thought self-leadership
	Sales success	Singh et al. (2017)
	Moral behavior	Steinbauer et al. (2014)

Authors' own illustration

Table 4 Effects of mindfulness and mindfulness trainings identified by previous studies

Category	Subcategory	Source
Stress resilience	Resilience	Brendel et al. (2016)
	Self-awareness	Mahfouz (2018)
	Self-reflection	Rupprecht et al. (2019)
	Self-compassion	Mahfouz (2018)
	Regulatory competence	Brendel et al. (2016)
	Self-care	Chesley and Wylson (2016)
		Christopher et al. (2011)
		Mahfouz (2018)
		Rupprecht et al. (2019)
	Tolerance of ambiguity	Brendel et al. (2016)
	Fatigue	Meiklejohn et al. (2012)
	Subjective well-being	Bartlett et al. (2019)
	Well-being	Christopher et al. (2011)
	Positive affect	Buckley and Sipe (2024)
		Carleton et al. (2018)
		Geschwind et al. (2011)
	Tolerance of stress	Brendel et al. (2016)
	Stable stress level	Sampl et al. (2017)
		Bartlett et al. (2019)
		Meiklejohn et al. (2012)
Anxiety	Brendel et al. (2016)	
Tolerance of anxiety	Bartlett et al. (2019)	
	Lomas et al. (2019)	
	Meiklejohn et al. (2012)	
	Roche et al. (2014)	
Mental disorders	Bartlett et al. (2019)	
Depression	Geschwind et al. (2011)	
Burnout	Lomas et al. (2019)	
	Piet and Hougaard (2011)	
	Roche et al. (2014)	
	Roche et al. (2014)	
	Psychological capital (mediating)	Roche et al. (2014)

Table 4 (continued)

Category	Subcategory	Source	
Leader competency	Job satisfaction	Lomas et al. (2019) Reb et al. (2014)	
	Communication style	Arendt et al. (2019)	
	Self-control	King and Haar (2017)	
	Emotional regulation	Meiklejohn et al. (2012)	
	Transformational leadership	Carleton et al. (2018)	
	Support for employees	Chesley and Wylson (2016)	
	Acceptance of others	Urrila and Mäkelä (2024)	
	Empathy, accepting advice	Chesley and Wylson (2016)	
	Emotional intelligence	Lomas et al. (2019) Meiklejohn et al. (2012)	
	Interpersonal harmony	Christopher et al. (2011)	
	Socioemotional development	Mahfouz (2018)	
	Ethical behavior, operational intent	Ruedy and Schweitzer (2010)	
	Own work performance	Self-efficacy, self-leadership	Carleton et al. (2018) Roche et al. (2014)
		Self-management, mindful task management	Mahfouz (2018) Rupprecht et al. (2019)
Transformational leadership, leadership Competence, authentic leadership		Carleton et al. (2018) Rupprecht et al. (2019) Zhang et al. (2020)	
Learning memory, academic competence		Meiklejohn et al. (2012)	
Improved exam performance		Sampl et al. (2017)	
Commitment to work		Gunasekara and Zheng (2019) Lucke and Furtner (2015)	
Role performance at work		Reb et al. (2014)	

Table 4 (continued)

Category	Subcategory	Source
External effects on employees	Social work relations	Arendt et al. (2019)
	Leader-member quality of relationships	Reb et al. (2019) Saragih et al. (2020)
	Employee satisfaction	Arendt et al. (2019)
	Coaching, engagement	Chesley and Wylson (2016)
	Teamwork	Rupprecht et al. (2019)
	Emotional exhaustion on the part of employees	Reb et al. (2014)
	Stress perceptions of employees	Reb et al. (2019)
	Employees' ability to perform	Reb et al. (2014)
	Mediator: organizational justice	Saragih et al. (2020)
External effects on the organization	Mediators: follower mindfulness, follower tenure	Zhang et al. (2020)
	Effectiveness of leadership	Wasylikiw et al. (2015)
	Transformation success in the context of change	King and Haar (2017)
	Business success	Rupprecht et al. (2019)

Authors' own illustration

Appendix 3

See Tables 5, 6, 7 and 8.

Table 5 Definitions of self-leadership in the literature

Source	Definition
Bryant and Kazan (2012, p. 13)	"The practice of intentionally influencing our thinking, feeling, and behaviors to achieve our objectives"
Du Plessis (2019, p. 451)	"Refers to the capacity to identify and apply one's signature strengths to initiate, maintain, or sustain self-influencing behaviors"
Furtner et al. (2018, p. 353)	"Self-influencing process that increases personal effectivity and performance"
Godwin et al. (1999, p. 154)	"The process of influencing oneself to establish the self-direction and self-motivation needed to perform"
Harari et al. (2021, p. 890)	"A process through which individuals exert self-influence over their thoughts, feelings, and behaviors at work"
Manz (1986, p. 589)	"A comprehensive self-influence perspective that concerns leading oneself toward performance of naturally motivating tasks as well as managing oneself to do work that must be done but is not naturally motivating"
Neck and Houghton (2006, p. 270)	"Is a process through which individuals control their own behavior, influencing and leading themselves through the use of specific sets of behavioral and cognitive strategies"

Authors' own illustration

Table 6 Validated self-leadership scales in the literature

Source	Scale abbreviation	Scale title	Number of items	Dimensions
Anderson and Prussia (1997)	SLQ	Self-Leadership Questionnaire	50 items 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree)	10-factor construct: Self-goal setting, self-reward, self-punishment, self-observation, self-cueing and self-withholding, focusing thoughts on natural rewards, visualizing successful performance, self-talk and evaluating beliefs and assumptions
Houghton and Neck (2002)	RSLQ	Revised Self-Leadership Questionnaire	35 items 5-point Likert-type scale (1 = not at all accurate; 5 = completely accurate)	9-factor construct representing the three primary dimensions of self-leadership (behavior-focused strategies, natural reward strategies, constructive thought pattern strategies)
Houghton et al. (2012)	ASLQ	Abbreviated Self-Leadership Questionnaire	9 items 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree)	3-factor construct: behavior awareness and volition, task motivation, constructive cognition

Authors' own illustration

Table 7 Definitions of mindfulness in the literature

Source	Definition
Bishop et al. (2004, p. 233)	“The self-regulation of attention, which involves sustained attention, attention switching, and the inhibition of elaborative processing”
Brown and Ryan (2003, p. 353)	“An enhanced attention to and awareness of current experience or present reality”
Dauids (1881, p. 555)	“Activity of mind and constant presence of mind which is one of the duties most frequently inculcated on the good Buddhist”
Furtner et al. (2018, p. 353)	“Intentional (purposeful) and nonjudgmental observation of all experiences in the present moment”
Gethin (2011, p. 263)	“State of mind, fixing the mind strongly upon any subject, attention, attentiveness, thought, reflection, consciousness”
Kabat-Zinn (1994, p. 4)	“Paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally”
Marlatt and Kristeller (1999, p. 68)	“Bringing one’s complete attention to the present experience on a moment-to-moment basis”
Shapiro (2009, p. 555)	“The awareness that arises out of intentionally attending in an open and discerning way to whatever is arising in the present moment”
Siegel (2007, p. 259)	“Waking up from a life on automatic, and being sensitive to novelty in our everyday experience”

Authors’ own illustration

Table 8 Validated mindfulness scales in the literature

Source	Scale abbreviation	Scale title	Number of items	Dimensions
Baer et al. (2008)	FFMQ	Five Facet Mindfulness Questionnaire	39 items 5-point Likert-type scale (1 = never or very rarely true; 5 = very often or always true)	Five-factor construct: observing (8 items), describing (8 items), acting with awareness (8 items), nonjudging of inner experience (8 items), and nonreactivity to inner experience (7 items)
Baer et al. (2004)	KIMS	Kentucky Inventory of Mindfulness Skills	39 items 5-point Likert-type scale (1 = never or very rarely true; 5 = almost always or always true)	Four-factor construct: observe (12 items), describe (8 items), act with awareness (10 items), and accept without judgment (9 items)
Brown and Ryan (2003)	MAAS	Mindful Attention Awareness Scale	15 items, 6-point Likert-type scale (1 = almost always; 6 = almost never)	Assesses awareness of and attention to internal and external events
Buchheld et al. (2001)	FMI	Freiburg Mindfulness Inventory	30 items 4-point Likert-type scale (1 = rarely; 4 = almost always)	Four-factor construct: present-moment disidentifying attention (12 items), nonjudgmental, nonevaluative attitudes toward self and others (7), openness to negative mental states (7), process-oriented, insightful understanding (4)
Cardaciotto et al. (2008)	PHLMS	Philadelphia Mindfulness Scale	20 items 5-point Likert-type scale (1 = never; 5 = very often)	Two-factor construct: acceptance of the present (10 items) and present-moment awareness (10 items)

Table 8 (continued)

Source	Scale abbreviation	Scale title	Number of items	Dimensions
Chadwick et al. (2008)	SMQ	Southampton Mindfulness Questionnaire	16 items 7-point Likert-type scale (0 = strongly disagree; 6 = strongly agree)	Four-factor construct: (1) decentered awareness of cognitions as mental events versus becoming lost in reaction; (2) allowing attention to remain with difficult experiences versus experiential avoidance; (3) accepting difficult thoughts/images and oneself versus judging cognitions and oneself; and (4) nonreaction to experience versus rumination/worry
Droutman et al. (2018)	AAMS	Adolescent and Adult Mindfulness Scale	19 items 5-point Likert-type scale (1 = never true; 5 = always true)	Four-factor construct: (1) focus on the present moment, represented by paying attention to one's surroundings, thoughts, feelings and emotions (9 items), (2) being nonreactive (3 items), (3) being nonjudgmental (4 items), and (4) being self-accepting (3 items)
Feldman et al. (2007)	CAMS-R	Cognitive and Affective Mindfulness Scale—Revised	12 items 4-point Likert-type scale (1 = rarely/not at all; 4 = almost always)	Four-factor construct: attention (3), present-focus (3), awareness (3), acceptance/nonjudgment of thoughts and feelings (3)
Lau et al. (2006)	TMS	Toronto Mindfulness Scale	13 items 5-point Likert-type scale (0 = not at all; 4 = very much)	Two-factor construct: curiosity (6 items) and decentering (7 items)
Solloway and Fisher (2007)	DMS	Developmental Mindfulness Survey	30 items 8-point Likert-type scale (1 = absolutely disagree; 8 = absolutely agree)	Assesses one dimension of mindfulness development to capture the additive qualities of a mindfulness practice

Table 8 (continued)

Source	Scale abbreviation	Scale title	Number of items	Dimensions
Tanay and Bernstein (2013)	SMS	State Mindfulness Scale	21 items 5-point Likert-type scale (1 = not at all; 5 = very well)	Two-factor construct: perceived level of awareness and attention (15 items), present mental and physical experience (6 items)

Authors' own illustration

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Declarations

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