

Blending mindfulness practices and character strengths increases employee well-being: A second-order meta-analysis and a follow-up field experiment

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Abstract

This study summarises the existing literature on Mindfulness-Based Interventions (MBIs) and their effect on employee well-being criteria and extends it by testing MBIs against a Mindfulness-Strengths-Based Intervention (MSBI). Given that extant MBIs focus on restoring well-being, our first hypothesis was that MBIs would perform better on reducing negative emotional states than on promoting well-being. To test our first hypothesis, we conducted a second-order meta-analysis, which summarised 13 first-order meta-analyses ($k = 311$). MBIs had stronger effects on reducing negative emotions ($g = -0.74$) than on increasing well-being ($g = 0.58$). Then, we conducted a follow-up field experiment, comparing how an MSBI performed against an MBI on employee well-being criteria. An MSBI combines mindful meditation, mindful living and Character-Strengths-

Abbreviations: AU, autonomy; B S-E, between-subjects effect; B-W S-E, between-within subjects effect; CFAs, confirmatory factor analyses; CSBI, character-strengths-based interventions; EM, environmental mastery; EWB, eudaimonic well-being; HRM, human resource managers; HWB, hedonic well-being; MBCT, mindfulness-based cognitive therapy; MBIs, mindfulness-based interventions; MSBR, mindfulness-based strengths reduction; MBSR, mindfulness-based stress reduction; MSBI, mindfulness-strengths-based Intervention; PA, positive affect; PG, personal growth; PL, purpose in life; PNF, psychological needs fulfilment; PR, positive relations; PWB, psychological well-being; RM-ANOVA, repeated-measures analysis of variance; RM-MANCOVA, repeated-measures covariate model; SA, self-acceptance; T1, time 1; T2, time 2; TG, treatment group; WTS, wald-type statistic; W S-E, within-subjects effects.

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Based Interventions. Our second hypothesis was that an MSBI would outperform an MBI on increasing employee well-being criteria. During an MSBI, participants (a) attain a conscious state of mindful awareness, and (b) direct their attention towards the discovery and habitual exercise of their character strengths. To test our second hypothesis, we randomly assigned employees of a small Spanish healthcare organisation to either an MSBI or an MBI intervention group. We measured employee well-being, before and after the intervention, using two well-established measures of hedonic and eudaimonic well-being. Our results show that both interventions were successful and had a large effect on both well-being criteria. Further, as predicted, the MSBI group reported higher absolute scores of well-being than the MBI group. Implications for theory and practice are discussed, and detailed appendices for practitioners are provided.

KEYWORDS

character strengths, eudaimonia, hedonia, mindfulness, Positive Affect, Psychological Well-being

1 | INTRODUCTION

In the United States alone, human resource managers (HRM) of large-sized firms spent approximately 3.6 million USD on well-being programmes during 2019 (Starner, 2019). Such a substantive investment in employee well-being seems justified, given that, according to the Society for Human Resources Management, HRMs declared an ROI ranging from \$1 to \$4 per dollar invested in developing employee well-being (Milligan, 2017). Employee well-being refers to 'the overall quality of an employee's experience and functioning at work' (Good et al., 2016, p. 126). Besides productivity increases, employee well-being relates to job satisfaction, extra-role performance and reduced turnover (Wright & Cropanzano, 2000; Wright et al., 2007). Thus, investing in promoting well-being seems to be good for business.

The practice of mindfulness at work is an efficient way of promoting employee well-being (Good et al., 2016; Lomas et al., 2019). Mindfulness has been broadly defined as 'present-centred attention and awareness' (Good et al., 2016, p. 115). Thirteen meta-analyses support the link between the habitual practice of mindfulness and several well-being outcomes, such as reduced distress, increased positive affect and life satisfaction across work sectors. Such improvements also occur within short-term structured interventions, or Mindfulness-Based Interventions (MBI). In an MBI, participants practise entering a mindful state by focusing on their breathing, their body or their surroundings (see Kabat-Zinn, 1990).

However, there is a substantive variation in the reported MBI meta-analytic effects on well-being criteria. For example, in our review of 13 meta-analyses, the effect sizes of MBIs on hedonic well-being criteria ranged from moderate ($g = -0.32$) to large ($g = -0.66$), and the effects on eudaimonic well-being criteria ranged from small ($g = 0.23$) to large ($g = 0.68$). Such variation warrants further study due to its important implications for the study and the application of MBIs in work settings. Without precise effect sizes, statistical power analyses (Cohen, 1988) would provide inaccurate sample size estimations for studies exploring the effect of MBIs on employee well-being.

Practitioner Notes

- Existing Mindfulness-Based Interventions (MBIs) are more effective in increasing hedonic well-being (through the reduction of negative states; $g = -0.74$) than in the promotion of eudaimonic well-being ($g = 0.58$).
- In a field experiment among healthcare workers, we compared an MBI against a Mindfulness-Strengths-Based Intervention (MSBI), an intervention designed to improve both hedonic and eudaimonic well-being.
- As expected, both interventions had a large effect on employee well-being. Yet, the MSBI group participants reported higher post-intervention scores on every facet of employee well-being (hedonic and eudaimonic) than the participants in the MBI group.

Similarly, without a trustworthy benchmark about how much improvement in employee well-being can be expected, HR practitioners might 'oversell' or 'undersell' the importance of exercising mindfulness at work. Thus, our work's first contribution is to summarise the effect sizes of MBIs on employee well-being by conducting a 'bare-bones' second-order meta-analysis (Oh, 2020; Schmidt & Oh, 2013).

An interesting feature of the extant MBIs is their flexibility and compatibility with other positive practices. Most of the MBIs identified in our review were 'hybrid' in nature, meaning that they combine mindful meditation with other types of well-being-promoting activities. The main rationale behind such a combination is that entering a mindful state through meditation allows participants to better direct and sustain their attention towards the activities of an MBI than if they did not enter a mindful state (Good et al., 2016).

A myriad of studies evidenced the restorative effect of MBIs and their potential to elicit changes in states, trait-like states or even stable traits. For example, the habitual practice of mindfulness increased reports of positive affect (state), or mindfulness-trait (trait-like state), or even stable traits such as conscientiousness and neuroticism (Giluk, 2009; Kiken et al., 2015). Further, the mechanisms underlying a mindfulness state (conscious attention and awareness; experiential processing) can provide employees with new insights about their psychological strengths in a way that elevates their habitual functioning. In turn, such change in strengths should elicit higher levels of individual well-being (Niemic et al., 2012).

Niemic's (2014) Mindfulness-Strengths-Based Intervention (MSBI) is a hybrid MBI that combines mindful meditation, mindful living, and Character-Strengths-Based interventions (CSBI). Character strengths are trait-like, foundational personal resources whose habitual activation elicits an optimal level of human functioning (Crossan et al., 2017; Peterson & Seligman, 2004). But why would an MBI study combines mindfulness meditation with character strength development practices when there are several other positive intervention activities available, such as gratitude journals, acts of kindness, and so forth?

There are theoretical and empirical arguments for incorporating CSBI practices into an MBI. As support for the theoretical argument, Niemic (2012) explains how the 'Five Mindfulness Trainings' proposed by Thich Nhat Hanh (1993) contribute to the development of character strengths. In turn, Niemic et al. (2012) also argued that the habitual exercise of character strengths supports mindful living on a positive developmental spiral. As support for the empirical argument, a meta-analysis comparing five types of positive interventions revealed that CSBI had the strongest effect on well-being ($g = 0.35$; $SE = 0.10$; Donaldson et al., 2019). However, no study has yet compared how an MSBI performs against an MBI in promoting employee well-being.

Niemic's MSBI relies on meditation exercises to elicit a mindful state and then to target a person's experiential attention 'towards what is strong rather to what is wrong' (Lottman et al., 2017, p. 7; Niemic et al., 2012). In Niemic's words, 'mindfulness and character strengths provide a mechanism for looking and a common language for

what to look for' (Niemiec & Lissing, 2016, p. 6). The MSBI addresses the extant unsolved issues of other MBIs, such as the indirect focus on character development in Mindfulness-Based Strengths Reduction (MSBR) and Mindfulness-Based Cognitive Therapy (MBCT) interventions and the lack of integration among character strengths. In other words, MBIs tend to focus on improving one character flaw rather than focusing on several signature strengths (Crossan et al., 2013; Niemiec & Lissing, 2016). Instead, an MSBI can strengthen employees' mindfulness, engage them more deeply with mindful living, and boost their conscious awareness around strength use, facilitating personal growth and flourishing (Niemiec, 2012).

Despite Niemiec's claim about the potential advantages of MSBIs over existing MBIs, there is a scarcity of evidence to support his claim. Niemiec & Lissing (2016) summarised the findings of prior pilot studies employing an MSBI, but such studies possessed several weaknesses. First, the pilot studies described were conducted in a laboratory setting with a waitlist control group, but participants were not randomised. Non-randomisation creates concerns about claims regarding causal effects (Antonakis et al., 2010). Second, none of these studies compared the effects of MSBI against another MBI type. Finally, none of these studies were conducted in work settings, despite the calls for doing so (Niemiec et al., 2012).

Our work's second contribution is conducting a field experiment that addresses some of the weaknesses in the prior studies involving MSBIs. Field experiments are important because even if we take the prior MSBI findings at face value, we still do not know whether an MSBI will improve well-being more than other types of MBI. To compare the efficacy of an MSBI against an MBI, we conducted a field experiment in a healthcare work setting. We then compared their relative effect on different facets of employee well-being. Our study is original in that it combines the insights of an empirical summary and then uses it to address a gap in extant MBI research. In this way, we advance the study of mindfulness at work and answer some of Good et al.'s (2016) 'open questions' about MBIs and employee well-being.

2 | THEORETICAL FRAMEWORK

We grounded our study on Good et al.'s (2016) framework on mindfulness at work. Mindfulness has been defined as a state (conscious present-centred, non-judgemental attention; Good et al., 2016; Kabat-Zinn, 1990); a process (conscious practice; the systematic effort of intentionally caring in an open manner; Shapiro & Carlson, 2009) and as a trait-like construct (mindfulness trait, a predisposition to be mindful in daily life; Baer et al., 2006). Our review revealed that research on mindfulness has been growing exponentially across various contexts, including the workplace. However, most of the extant research on mindfulness at work has been atheoretical (Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012). Only recently have Good et al. (2016) provided a framework for studying mindfulness at work. This framework not only summarised the literature connecting the practice of mindfulness at work with well-being criteria, but also proposed several 'open questions' to guide future research.

3 | MINDFULNESS-BASED INTERVENTIONS (MBI) IN WORK SETTINGS

Originally conceived as an alternative treatment of chronic pain, Kabat-Zinn's (1982) Mindfulness-Based Stress Reduction (MBSR) has become the most popular type of MBI. The MSBR usually consists of an 8-week training course that teaches a version of Vipassana (Theravada Buddhist) meditation and includes body scan exercises and other selected exercises from hatha yoga (Kabat-Zinn, 1990). Its goal is to facilitate the regulation of negative emotions through conscious and non-judgemental awareness and acceptance.

Good et al.'s (2016) framework explains the underlying mechanisms by which mindfulness influences well-being criteria. In short, these authors suggest that the habitual practice of mindfulness increases the ability for employees to 'shift cognitive gears' from cognitive processing into experiential processing. Cognitive processing

refers to an attempt to understand, work through or resolve what occupies the mind, especially when it has personal importance. Through cognitive processing, employees evaluate and interpret the perceived stimuli and apply them to solve work issues, that is, using external stimuli to solve a problem while executing a work task to meet a team's or organisation's goal in time. For example, healthcare professionals engage in cognitive processing to assess their patients' observable symptoms (e.g., high fever, excessive sweat) and use that information to decide on their potential causes (viral infection) and respective treatments.

We know from the Job-Demand Resources Theory that when the job demands of a work setting outweigh the available job resources, employees experience increased job strain and must tap into their personal resources to compensate for the reduced job resources (Bakker & Demerouti, 2017). Applying this knowledge to Good et al.'s (2016) framework, the job strain resulting from operating within demanding and uncertain work contexts such as the healthcare sector (i.e., having to treat a large number of patients with different symptoms simultaneously as a result of a pandemic and with the risk of becoming infected) will likely overload workers' cognitive processing (personal resources). In these contexts, cognitive processing is more likely to become repetitive and ruminative, eventually eliciting meta-cognitions of self-concern, as well as automatic responses to perceived contextual threats, even in the absence of a real threat. Such responses are the path to chronic distress and anxiety, which are characterised by an inability to 'turn off' the automatic threat response.

When individuals enter a mindful state, experiential processing 'over-rides' cognitive processing. Experiential processing refers to the ability to direct attention to stimuli (both internal, such as emotional or physiological responses, and external) as they present themselves, without rushing into immediate attempts to derive meaning from them. Instead, experiential processing sees thoughts and emotions as parts of the ongoing stream of consciousness. Similarly, experiential processing allows employees to detach external stimuli from their (anticipated) negative emotional states and (anticipated) negative self-consequences in favour of providing a wider perspective on how those stimuli fit in the larger scheme of things. It is important to note that a mindfulness state is not opposed to evaluation processes or judgements. Instead, those judgements can be conducted based on true contextual awareness and not on the anticipated threats that characterise distress responses.

Whereas Good et al.'s (2016) framework explains the mechanism by which mindfulness fosters hedonic well-being (by reducing negative emotional states), it does not provide any account of the mechanisms by which mindfulness enhances the eudaimonic facet of employee well-being. We propose that gap exists because extant MBIs were developed for use in the medical and clinical psychological fields. In other words, the way mindfulness was initially operationalised in Western cultures followed a well-being-restoration logic rather than a logic of well-being enhancement. Consequently, we make the following hypothesis:

Hypothesis 1 *Extant MBIs will have stronger effects on employees reducing negative affective states (hedonic well-being) than on increasing eudaimonic well-being outcomes.*

4 | CHARACTER STRENGTHS

Psychological strengths have been broadly defined as individual characteristics that allow people to perform at their personal best (Wood et al., 2011). The label 'inherited strengths' comprises the set of strengths that include genetically inherited individual attributes that remain relatively stable. Some examples are fluid intelligence (Horn & Cattell, 1966), general cognitive ability (Schmidt et al., 2003) and distal personality traits like conscientiousness and neuroticism (also known as emotional stability; Barrick, 2003).

The second set of strengths comprises learnt strengths. The adjective 'learnt' refers to those strengths that were acquired through systematic instruction (e.g., knowledge, abilities and skills) or the insights that result from reflecting upon intense personal experiences. Unlike inherited strengths, sustaining acquired strengths requires

conscious effort and continual practice. If individuals do not exercise their learnt strengths habitually, then this type of strength will likely erode, for example, hindering an individual's job performance.

Finally, espoused strengths comprise those core beliefs and worldviews that enable optimal functioning within social contexts and remain stable across broader contexts, such as positive social norms and cultural traditions. Following Peterson and Seligman (2004), we included only those universal values that are appraised as functional (virtuous) across cultural contexts and thus enable a mindful and eudaimonic living in this subset (see Figure 1).

In Figure 1, character strengths, then, rest at the intersection of these three strength types, as they amalgamate inherited, learnt and espoused strengths. What distinguishes character strengths from other psychological strengths is that character strengths are virtuous in nature. In other words, while other strengths such as cognitive ability can act as a means for constructive or destructive ends, the habitual activation of character strengths enables personal success alongside the attainment of social good (Crossan et al., 2013, 2017).

5 | MINDFULNESS-STRENGTH-BASED INTERVENTION

The MSBI is an alternative approach to the extant operationalisations of mindfulness. The MSBI is theoretically grounded in Buddhist and Aristotelian virtue ethics traditions (Niemiec, 2014). Both virtue ethics traditions share the same goal: promoting ways to live a good life based on balance, gratitude, kindness, and compassion towards self and others (Niemiec, 2012). Whereas contemporary Buddhist monks, such as Thich Nhat Hanh (1993), invoke the term 'mindful living' to define what 'living a good life' means, positive psychologists rely on the notion of Eudaimonia to do so (Waterman, 2008). Therefore, it is plausible that the mechanisms underlying mindful living can be leveraged to restore hedonic well-being and promote eudaimonic well-being simultaneously (Niemiec et al., 2012).

6 | MINDFULNESS-STRENGTHS-BASED INTERVENTIONS AND EMPLOYEE WELL-BEING

Ingrained in the Buddhist tradition is the idea that meditation is only a 'doorway' to an active life of gratitude, kindness, and compassion. These virtues have been described as innate strengths of character in Western cultures (Peterson & Seligman, 2004). Therefore, it follows that to be effective, the MSBI needs first to allow participants to enter a mindful state and then focus their experiential attention on discovering their character strengths.

We expect both MBI and MSBI to improve employees' hedonic well-being (positive emotions). MBI and MSBI have in common that both interventions' first activity is entering a mindful state through meditation. Entering a mindful state helps to 'de-automatise' participants' stream of consciousness. In this regard, an MSBI leverages the proven mindful meditation activity present in other MBIs, such as the MSBR (Sedlmeier et al., 2012). Thus, only after participants become proficient in mindful meditation can they begin to regulate their thoughts and emotions. At this later stage is when the well-being-promoting effects of an MSBI arise (compared to the well-being-restoring effect of an MBI).

A core difference between MBIs and MSBIs is where attention is directed after entering a mindful state. Given its tradition within clinical settings, most activities in traditional MBIs place a stronger emphasis on directing conscious attention towards the acceptance of painful or traumatic events as a way of reducing displeasure or increasing positive emotions. An MSBI places a stronger emphasis on activities aimed at discovering the good in one's life and leveraging it to improve participants' relations with the self and others, strengthening one's ability for the habitual exercise of virtue (mindful and eudaimonic living).

It follows that the mindful development of character strengths should increase participants' reports of eudaimonic well-being outcomes. For example, let us take the Ryff and Keyes' (1995) model of psychological well-

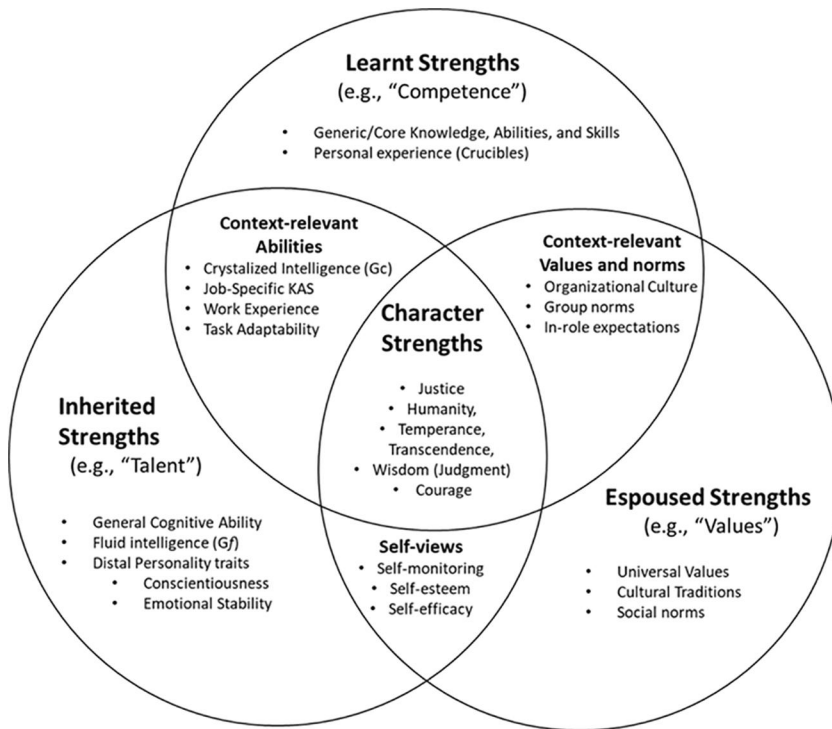


FIGURE 1 A conceptual model of psychological strengths

being, which is considered a valid model of eudaimonic well-being. Psychological well-being consists of six facets (Self-acceptance, Environmental Mastery, Purpose in Life, Positive Relations with Others, Personal Growth and Autonomy). Based on these facets, we could expect that entering a mindful state and focusing on the things that one might be grateful for in one's job (character strength of gratitude) should increase one's self-acceptance. Similarly, directing an aware consciousness towards the strengths of Love, Hope and Gratitude (as defined by Peterson & Seligman, 2004) should reveal opportunities for finding purpose in life, environmental mastery and personal growth. Finally, increased emotional and cognitive regulation would result in higher autonomy.

As an illustrative example, let us consider how the experiential processing of Love, Hope, and Gratitude can improve healthcare sector employees' habitual functioning. Focusing on Love should strengthen the inherent calling to protect people's health (or even saving their lives), eliciting purpose. Similarly, the strength of Hope might help healthcare professionals to find new ways to cope with having to operate in a highly stressful context and, on some occasions, without sufficient job resources (Environmental Mastery). Further, the strength of Gratitude should allow healthcare professionals to experience personal growth as a result of their profession. Likewise, the awareness of how one's actions impact others enhances how employees relate to each other, facilitating the development of positive relations with others. Finally, gaining an increased awareness of one's vitality and agency supports Zest and energises individuals to tackle contextual challenges and, thus, experience environmental mastery and autonomy. Therefore, we predict:

Hypothesis 2a *Participants of an MSBI will report higher scores of employees' hedonic well-being than the participants of an MBI.*

Hypothesis 2b *Participants of an MSBI will report higher scores of employees' eudaimonic well-being than the participants of an MBI.*

7 | PHASE 1: SECOND-ORDER META-ANALYSIS

7.1 | Method

7.1.1 | Procedure

We conducted a literature search in the mainstream academic search engines (Scopus, Medline, Google Scholar and ProQuest). The search criteria were based on combinations of the following keywords: 'mindfulness', 'intervention', 'wellbeing', 'positive emotions' and 'positive affect'. We followed the PRISMA approach to select only those meta-analyses that were relevant to our study objectives. Our inclusion criteria were similar to Lomas et al. (2019), mainly (1) research undertaken in an occupational setting; (2) empirical assessment of a mindfulness intervention, well-being and/or performance outcomes; (3) quantitative analysis; (4) published in a peer-reviewed academic journal and (5) written in English. We acknowledge that our search might not be exhaustive and recognise the opportunity for a more comprehensive literature review. This study's objective was not to conduct a full meta-analytic review on MBIs but to address the second-order sampling variation among MBIs' reported meta-analytic effect sizes. The data that support the findings of this study are openly available at https://osf.io/q3phb/?view_only=6855880e05b7416db96eb3220892d104.

As a result of our search, we originally identified 14 meta-analyses on mindfulness interventions ($k = 409$; $n = 22,500$), but only 13 studies were retained for our analysis (Bartlett et al., 2019; Bohlmeijer et al., 2010; Burton et al., 2017; Eberth & Sedlmeier, 2012; Grossman et al., 2004; Guillaumie et al., 2017; Jayewardene et al., 2017; Lomas et al., 2019; Ruiz-Fernández et al., 2020; Spinelli et al., 2019; de Vibe et al., 2017; Virgili, 2015; Vonderlin et al., 2020). Of the 13 retained meta-analyses, only 2 meta-analyses reported effect sizes for distress but not for well-being (Bohlmeijer et al., 2010; Jayewardene et al., 2017; see Table 1). We constructed a dataset collecting standardised effect sizes (Hedge's g) and standard errors on two well-being outcomes, distress ($k = 192$) and well-being ($k = 119$). Hedge's g is a variant of Cohen's d that includes a correction for small sample sizes (Hedges & Olkin, 1985). We then conducted the calculations proposed by Schmidt and Oh (2013) (pp. 207–209).

7.2 | Results

Table 1 summarises the second-order meta-analysis results of the effects of MBI on hedonic and eudaimonic well-being. Table 1 shows the original estimates reported in the first-order meta-analysis and the adjusted overall effect sizes. A caveat is that the detailed inspection of the studies comprising the first-order meta-analyses summarising primary studies in the healthcare sector had small samples (with $N < 30$ per experimental condition), suggesting that this might be a specific issue for consideration when researching in this sector.

For hedonic well-being (operationalised as distress reduction), the overall second-order meta-analytic mean was $\bar{g} = -0.74$, $SE = 0.01$, 95% confidence interval (CI) $[-0.76, -0.71]$, $k = 192$, $p < 0.05$. The second-order sampling error accounted for 12.10% of the total variance among first-order meta-analyses. In turn, the true sampling error explained 1% of the variance between first-order meta-analyses. Finally, the reliability of the first-order overall effect size was 0.88.

For eudaimonic well-being (increase in overall well-being), the overall second-order meta-analytic mean was $\bar{g} = 0.58$, $SE = 0.01$, 95% CI $[0.56, 0.62]$, $k = 336$, $p < 0.05$. The second-order sampling error accounted for 13.96% of the total variance among first-order meta-analyses. In turn, the true sampling error explained 1% of the variance between first-order meta-analyses. Finally, the reliability of the first-order overall effect size was 0.86. Taken as a whole, these findings provide support for Hypothesis 1, which stated that the effect of MBIs would be stronger on hedonic well-being criteria than on eudaimonic well-being criteria. We attribute this finding to how

TABLE 1 Second-order meta-analysis summarising the effects of MBIs on hedonic and eudaimonic well-being criteria

First-order meta-analyses	Hedonic well-being (distress reduction)					Eudaimonic well-being (increase in well-being)						
	k_j	g_i	SE g_i	95% CI	S_g	Adj. g_i	k_j	g_i	SE g_i	95% CI	S_g	Adj. g_i
Vonderlin et al. (2020)	43	-0.66	0.11	[-0.88, -0.44]	0.67	-0.58	22	0.68	0.22	[0.24, 1.12]	1.11	0.58
Ruiz-Fernández et al. (2020)	6	-0.65	-0.29	[-0.08, -1.22]	0.50	-0.57	-	-	-	-	-	-
Bartlett et al. (2019)	14	-0.69	-0.10	[-0.49, -0.90]	0.15	-0.60	8	0.46	0.14	[0.17, 0.72]	0.16	0.40
Spinelli et al. (2019)	14	-0.46	-0.08	[-0.30, -0.62]	0.09	-0.40	24	0.32	0.05	[0.23, 0.42]	0.05	0.28
Lomas et al. (2019)	7	-0.61	0.11	[-0.75, -0.33]	0.08	-0.53	7	0.49	0.18	[0.14, 0.83]	0.22	0.42
de Vibe et al. (2017)	40	-0.53	-0.07	[-0.40, -0.67]	0.19	-0.46	25	0.44	0.07	[0.31, 0.56]	0.06	0.38
Guillaumie et al. (2017) ^a	9	-0.34	0.55	[-2.67, 1.99]	2.76	-0.29	2	0.23	0.26	[-0.27, 0.75]	0.13	0.20
Jayewardene et al. (2017)	9	-0.43	-0.12	[-0.20, -0.67]	0.13	-0.38	-	-	-	-	-	-
Burton et al. (2017)	7	-0.34	-0.07	[-0.20, -0.47]	0.03	-0.30	-	-	-	-	-	-
Virgili (2015)	19	-0.68	-0.05	[-0.58, -0.78]	0.04	-0.60	-	-	-	-	-	-
Eberth and Sedlmeier (2012)	9	-0.79	0.01	[-0.82, -0.76]	0.01	-0.69	13	0.65	0.01	[0.61, 0.69]	0.004	0.56
Bohlmeijer et al. (2010)	8	-0.32	-0.09	[-0.13, -0.05]	0.07	-0.28	-	-	-	-	-	-
Grossman et al. (2004)	-	-	-	-	-	-	18	0.50	0.03	[0.43, 0.56]	0.02	0.43
Second-order statistics	\bar{k}	\bar{g}	σ_e^2	95% CI	σ_2^2	σ^2	\bar{k}	\bar{g}	σ_e^2	95% CI	σ_2^2	σ^2
	192	-0.74	0.01	[-0.76, -0.71]	0.01	0.01	119	0.58	0.01	[0.54, 0.60]	0.02	0.1
	R_{xx}	R_{xx}	0.88	ProVar =	0.12		R_{xx}	R_{xx}	0.86	ProVar =	0.14	

Abbreviations: k_j , number of samples; g_i , effect size—first-order meta-analysis; SE g_i , standard error—first-order meta-analysis; S_g , variance of the observed g_i ; Adj. g_i , adjusted overall first-order effect size; k , number of studies used in second-order summary; \bar{g} , second-order grand mean; σ_e^2 , second-order sampling variance; σ^2 , variance between first-order-meta-analysis variance; σ^2 , true between first-order-meta-analysis variance; ProVar, proportion of the variance explained by second-order sampling error; R_{xx} , reliability of the first-order overall effect size.

^aNon-significant meta-analytic effect sizes.

traditional MBIs were designed. More precisely, due to their clinical focus, traditional MBIs are more efficient in restoring well-being than in promoting well-being. Thus, a follow-up study is warranted.

8 | PHASE 2: FOLLOW-UP FIELD EXPERIMENT

8.1 | Methods

8.1.1 | Participants

Based on the effect sizes detected in Phase 1, we used G*power 3.1 (Faul et al., 2009) to calculate our minimum viable sample size. Given that MSBIs combine mindfulness-based and character-strengths activities, we converted the second-order effect sizes reported in Phase 1 to Cohen's f . We were conservative in our statistical power analysis, aggregating only the absolute values of the MBIs' effect on well-being ($\bar{g} = 0.58$) and the effect size of character-strengths intervention ($g = 0.35$) reported by Donaldson et al. (2019), which translates into a Cohen's f value of $f = 0.47$. Our power analysis revealed that the minimum sample size required to detect significant effect sizes at a value of $p < 0.05$ and of $1 - \beta = 0.80$ is $N = 38$.

Consequently, we reached out to a small healthcare organisation situated in Barcelona (Spain) that employed 35 registered nurses and nurses in training (further referred to as healthcare workers). After the randomisation process, the MSBI group consisted of 16 women and 2 men ($N = 18$), ranging in age from 18 to 33 years old ($M = 23.72$; $SD = 5.17$). The MBI reference group consisted of 16 women and 1 man ($N = 17$), also belonging to the same organisation; their ages ranged from 17 to 40 years old ($M = 23.58$; $SD = 7.34$). Our sample did not differ from the samples reported in studies involving healthcare workers.

8.1.2 | Procedure

Following Podsakoff & Podsakoff's (2019) recommendations for conducting field experiments, participants were randomly assigned to MSBI and MBI groups. All participants completed self-report measures at the beginning (Session 1) and at the study's end (Session 8). Both interventions had a duration of eight sessions (one session per week). There was no attrition, and our final sample consisted of 35 participants (see Figure 2 for a CONSORT flow diagram). Participation was voluntary, and no financial compensation was provided.

Socialising among participants could not be avoided since they all worked in the same location. Socialising could lead to cross-contamination between the treatment and control groups through diffusion effects. However, previous studies suggest that behavioural and psychosocial outcomes may be resistant to cross-contamination in randomised controlled trials. Thus, cross-contamination is not necessarily a substantial threat to the internal validity of a study measuring psychological variables (see e.g., Lang et al., 2009).

8.1.3 | Study intervention

The MBI group participated only in mindfulness activities in line with the approach proposed by Kabat-Zinn (1990). The MSBI intervention was adapted from Niemiec's (2014) programme (MBSP). Appendix 1 (Table A1) shows the progression of the eight sessions for the MBI and MSBI groups. After participants were randomly assigned to each group, the VIA-IS (Values in Action—Inventory of Strengths; Peterson & Seligman, 2004) was used to rank participants' character strengths in the MSBI group. Each session lasted 75 min for both intervention groups. During the last 10 min of each session, participants were asked to think about (MBI) or discuss (MSBI) and plan how to

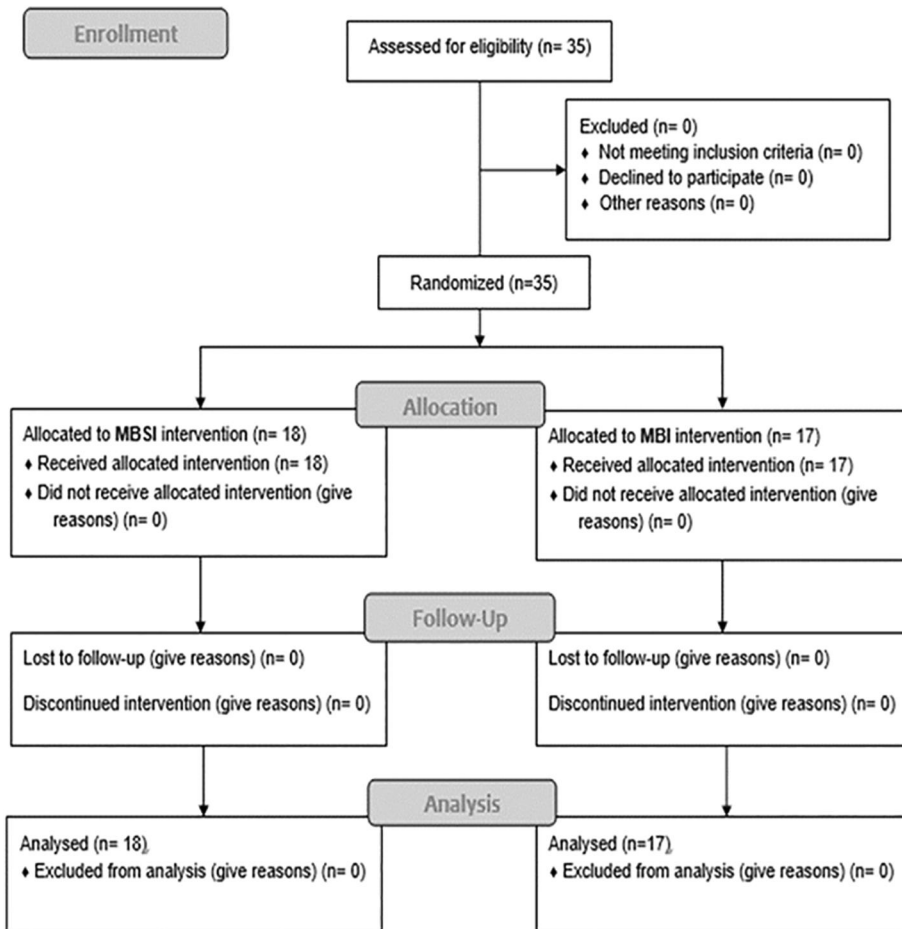


FIGURE 2 CONSORT diagram of participant flow

exercise mindfulness (MBI) and character strengths (MSBI) in the time between sessions. For sessions 2–8, participants provided feedback on how they exercised mindfulness and character strengths in the period between sessions (see Appendix 1 - Tables A1, A2) for a detailed explanation).

8.1.4 | Measures

We measured employee well-being through two well-established scales measuring constructs that reflect hedonic and eudaimonic well-being (Positive Affect [PA] and Psychological Well-being [PWB], respectively). In this way, we could identify how our interventions affected two different facets of employee well-being.

Positive Affect

We employed the PA dimension of the PANAS scale to measure positive affect (Watson et al., 1988). This scale consists of several words that describe different feelings and emotions. Respondents matched their feelings to the words using a 5-point Likert scale ranging from 1 = ‘Very slightly or Not at All’ to 5 = ‘Extremely’. Cronbach’s alpha for this scale was $\alpha = 0.93$ at Time 1 and $\alpha = 0.95$ at Time 2.

Psychological Well-being

We used the scale developed by Ryff and Keyes (1995) to measure psychological well-being. The Psychological Well-being (PWB) consists of 29 items scored using a 6-point Likert scale ranging from 1 = 'Strongly disagree' to 6 = 'Strongly agree'. Given that Cronbach's alpha assumes tau equivalence, an assumption that does not always hold, it is a good practice to report additional indicators of reliability where possible. We report Raykov & Shrout's (2002) composite reliabilities for the employee well-being latent factor and its facets in the results section.

8.1.5 | Control variables

We controlled for Psychological Needs Fulfilment (PNF) because, as Ryan and Deci (2001) posited, PNF is the principal factor that fosters well-being rather than being a part of the conceptual space of well-being. To this end, we employed the need satisfaction scale (La Guardia et al., 2000), which includes three items per dimension (autonomy, competence and relatedness). Participants rated on a 7-point Likert scale how well their basic needs are met with specific target figures: mother, father, romantic partner, best friend, roommate and a significant adult. Cronbach's alpha was $\alpha = 0.85$ for Time 1, and $\alpha = 0.91$ for Time 2.

8.1.6 | Data analysis

We conducted all our analyses using MPLUS 8.0 and IBM SPSS Statistics 25.0. First, we explored our study variables to test whether they are normally distributed using the Shapiro-Wilk statistic. Testing for normality is particularly relevant in small sample sizes, as outliers' presence might bias subsequent analysis. Given our small sample size, as a way of reducing the $N/\text{parameter}$ ratio, we parcelled the items of PA, PWB and PNF dimensions into one aggregated indicator for each facet. Despite the controversy around parcelling, this practice is justified when it respects the latent factorial structure of a well-established scale in the literature (Little et al., 2009).

We conducted confirmatory factor analyses (CFAs) for our pre- and post-intervention measures. First, we tested a model with all items loading on a single factor (employee well-being). Then we tested the second model that consisted of a hierarchical two-factor model with PNF and PW loading into a latent, first-order construct (eudaimonic well-being). PA acted as an indicator of hedonic well-being. Both hedonic and eudaimonic well-being were set to load into employee well-being (second-order, latent construct). We then tested an alternative hierarchical model, where PA was again taken as a parcelled indicator of hedonic well-being. Five facets of PW were taken as parcelled indicators of eudaimonic well-being, and both first-order factors were loaded into employee well-being (second-order construct). However, in this alternative hierarchical model, PNF was modelled as an independent, first-order latent construct and was allowed to correlate with eudaimonic well-being and employee well-being. Finally, we tested a fourth model consisting of three interrelated factors: PA, PNF and PWB items were allowed to correlate. To test model fit, we used the goodness-of-fit indicators proposed by Cheung and Rensvold (2002). See Appendix 2 for a detailed explanation of these indicators.

Third, to test our hypotheses, we conducted a repeated-measure multivariate analysis of (co)variance (RM-MANCOVA). RM-MANCOVA consists of a multivariate hierarchical linear model used to estimate means across groups (Level 2—Between subjects; Group) and within participants (Level 1—Within Subjects; Time). Further, RM-MANCOVA allows testing to determine if any temporal within-subjects changes (Level 1) that occur due to the Level 2 factors are significant (Group \times Time interaction).

Unlike more advanced statistical methods (e.g., multi-group latent growth modelling), RM-MANCOVA works relatively well with small samples, and its results have a relatively straightforward interpretation. When comparing interventions, the ideal result would be a between-within subject effect in the hypothesised direction (i.e., a treatment group reporting higher estimated marginal means and a different trend slope pattern than the reference

group). This cross-level effect would suggest that the treatment intervention was successful and had a more substantial effect than the reference treatment. Another desirable result would be a significant within-subject effect in the hypothesised direction. Such an outcome would suggest that both interventions were successful, yet there would be no significant shift in trend slope. Finally, a significant between-subject effect would indicate differences across groups.

8.2 | Results

The Shapiro–Wilk test of normality was non-significant for all our measures. In other words, the distributions of positive affect, all dimensions of PWB, PNF or its facets did not differ substantially from a normal distribution. These results suggest that despite our small sample size, parametric analyses such as RM-MANCOVA are justified. Table 2 reports mean, SD and both parametric (Pearson's r) and non-parametric correlations (Kendall's tau) for all measured variables in our study. Our experimental manipulation did not correlate with any variable at Time 1, except for PA at Time 1. Therefore, this result suggests that participants' randomisation process worked in its majority. Still, we caution when interpreting any between-subjects mean differences in PA, as it might be a statistical artefact.

8.2.1 | Confirmatory factor analyses

After testing several nested models, the alternative hierarchical model of employee well-being (second-order factor) as informed by two latent factors (hedonic and eudaimonic) and with psychological need fulfilment modelled as a correlated latent construct showed the best fit to our datapoints for Times 1 and 2 (see Figures 3 and 4). We excluded Ryff & Keyes's (1995) sub-scale of 'autonomy' from our CFAs because, as one anonymous reviewer suggested, using an overlapping construct might affect our findings. Following Self-Determination Theory (Ryan & Deci, 2001), we established three latent correlation paths between psychological need satisfaction (first-order factor) and eudaimonic well-being (latent first-order factor) and employee well-being (second-order factor). Both the CFA model for the pre-intervention measures ($\chi^2(25) = 34.36$ ns; RMSEA = 0.10; CFI = 0.93; TLI = 0.90; SRMR = 0.08) and post-intervention measures ($\chi^2(25) = 29.30$ ns; RMSEA = 0.07; CFI = 0.96; TLI = 0.95; SRMR = 0.06) presented a good and excellent fit respectively, even after adding a second-order construct capturing employee well-being (Table A3).

We detected significant latent correlations between PNF and eudaimonic well-being ($r = 0.59^{***}$ for Time 1 and $r = 0.73^{***}$ for Time 2; see Figures 3 and 4). Instead, the latent correlation between PNF and employee well-being (taken as a higher-order construct) was significant at Time 1 but became non-significant at Time 2 ($r = 0.66^{**}$; and $r = 0.20$ ns, respectively). Finally, we used the standardised factor loadings to calculate Raykov's composite reliabilities for the latent constructs. More precisely, for eudaimonic well-being $\tau = 0.85$ for Time 1 (pre-intervention) and $\tau = 0.86$ for Time 2 (post-intervention). The composite reliability for our measure of PNF measures was $\tau = 0.67$ at T1 and $\tau = 0.75$ at T2. In combination with these measures and Cronbach's alphas, our results support aggregation for these scales.

8.2.2 | Testing of hypotheses: multivariate analyses

Box's M test was non-significant ($M = 161.47$, $F[78, 3413.55] = 1.24$, ns), indicating that the statistical software's multivariate solution is trustworthy. The results of our multivariate analyses revealed that there were no significant between-subject mean differences across MBI types on employee well-being (Wilk's $\Lambda = 0.72$, $F[6, 27] = 1.71$

TABLE 2 Means, standard deviations, Pearson's r and Kendall's tau for all variables (N = 35)

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. TG	0.51	0.51	-	0.16	0.22	0.06	0.18	0.09	0.05	-0.13	0.06	0.16	0.24	0.01	0.09	0.05	-0.20	0.04	-0.06	0.12	0.33*	0.27
2. EWB-SA-T1	3.19	1.04	0.18	-	0.60**	0.31*	0.17	0.30*	0.254*	0.30*	0.24	0.42**	0.32**	0.51**	0.35**	0.37**	0.25*	0.42**	0.39**	0.26*	0.01	0.18
3. EWB-SA-T2	3.66	0.90	0.25	0.77**	-	0.21	0.17	0.31*	0.38**	0.23	0.27*	0.38**	0.36**	0.35**	0.35**	0.38**	0.26*	0.25*	0.34**	0.45**	0.27*	-0.10
4. EWB-EM-T1	3.48	0.79	0.04	0.47**	0.32	-	0.55**	0.26*	0.24	0.14	0.10	0.37**	0.38**	0.29*	0.32**	0.32**	0.25*	0.18	0.16	0.21	0.22	0.05
5. EWB-EM-T2	3.68	0.85	0.19	0.25	0.23	0.73**	-	0.08	0.25*	0.10	0.13	0.24*	0.37**	0.11	0.17	0.28*	0.03	0.07	0.001	0.20	0.10	0.22
6. EWB-PG-T1	3.79	1.25	0.11	0.41*	0.49**	0.35*	0.12	-	0.52**	0.26*	0.26*	0.60**	0.39**	0.33**	0.35**	0.27*	0.35**	0.21	0.34**	0.22	0.30*	0.15
7. EWB-PG-T2	4.07	1.34	0.02	0.33*	0.52**	0.34*	0.31	0.67**	-	0.22	0.27*	0.56**	0.54**	0.23	0.23	0.30*	0.23	0.17	0.28*	0.30*	0.21	0.00
8. EWB-PO-T1	3.93	1.31	-0.18	0.41*	0.31	0.25	0.24	0.44**	0.35*	-	0.66**	0.14	0.11	0.19	0.17	0.24	0.37**	0.13	0.35**	0.20	0.22	0.10
9. EWB-PO-T2	4.09	1.20	0.03	0.42*	0.42*	0.22	0.33	0.43*	0.45**	0.79**	-	0.17	0.25*	0.18	0.16	0.32*	0.24*	0.19	0.33**	0.32**	0.16	0.21
10. EWB-PU-T1	3.35	1.31	0.22	0.60**	0.59**	0.49**	0.32	0.75**	0.73**	0.25	0.33	-	0.66**	0.46**	0.45**	0.32**	0.38**	0.30*	0.40**	0.35**	0.33**	0.24
11. EWB-PU-T2	3.57	1.26	0.27	0.47**	0.56**	0.49**	0.50**	0.53**	0.71**	0.17	0.36*	0.78**	-	0.35**	0.33**	0.38**	0.27*	0.36**	0.32*	0.42**	0.26*	-0.14
12. PNF-T1	3.93	1.14	0.001	0.72**	0.52**	0.42*	0.13	0.45**	0.36*	0.31	0.27	0.61**	0.51**	-	0.82**	0.53**	0.68**	0.57**	0.68**	0.61**	0.08	-0.12
13. PNF-Aut-T1	3.66	1.39	0.09	0.72**	0.52**	0.39*	0.20	0.43**	0.33	0.26	0.25	0.56**	0.46**	0.92**	-	0.58**	0.55**	0.53**	0.55**	0.54**	0.10	-0.09
14. PNF-Aut-T2	4.17	1.43	0.05	0.54**	0.56**	0.45**	0.38*	0.42*	0.50**	0.36*	0.507**	0.48**	0.55**	0.71**	0.75**	-	0.34**	0.56**	0.41**	0.64**	0.01	-0.13
15. PNF-Rel-T1	4.24	1.35	-0.24	0.57**	0.39*	0.42*	0.09	0.45**	0.30	0.47**	0.27	0.52**	0.36*	0.85**	0.66**	.50**	-	0.49**	0.59**	0.40**	0.10	-0.07
16. PNF-Rel-T2	4.43	1.08	0.02	0.41*	0.40*	0.26	0.13	0.34*	0.34*	0.20	0.28	0.44**	0.51**	0.73**	0.64**	0.73**	0.62**	-	0.45**	0.55**	-0.05	-0.09
17. PNF-Com-T1	4.09	1.19	-0.05	0.60**	0.51**	0.28	0.02	0.47**	0.44**	0.42*	0.42*	0.56**	0.49**	0.85**	0.71**	0.59**	0.73**	0.62**	-	0.62**	0.16	0.02
18. PNF-Com-T2	4.33	1.22	0.11	0.50**	0.57**	0.30	0.24	0.34*	0.48**	0.22	0.39*	0.47**	0.63**	0.75**	0.66**	0.83**	0.53**	0.74**	0.75**	-	0.14	0.53**
19. HWB-T1	2.88	1.11	0.35*	0.36*	0.34*	0.29	0.16	0.43*	0.24	0.32	0.27	0.47**	0.34*	0.14	0.11	0.02	0.11	-0.06	0.22	0.06	-	0.27
20. HWB-T2	3.16	1.11	0.34*	0.02	0.26	-0.04	0.13	0.34*	0.26	0.01	0.15	0.34*	0.35*	-0.15	-0.11	-0.04	-0.18	-0.05	-0.11	-0.03	0.70**	-

Note: The lower diagonal shows Pearson's r and the upper diagonal shows Kendall's Tau.

Abbreviations: AU, autonomy; EM, environmental mastery; EWB, eudaimonic well-being; HWB, hedonic well-being (positive affect); PG, personal growth; PL, purpose in life; PNF, psychological needs fulfillment; PR, positive relations; SA, self-acceptance; T1, Time 1; T2, Time 2; TG, treatment group.

*p < 0.05; **p < 0.01.

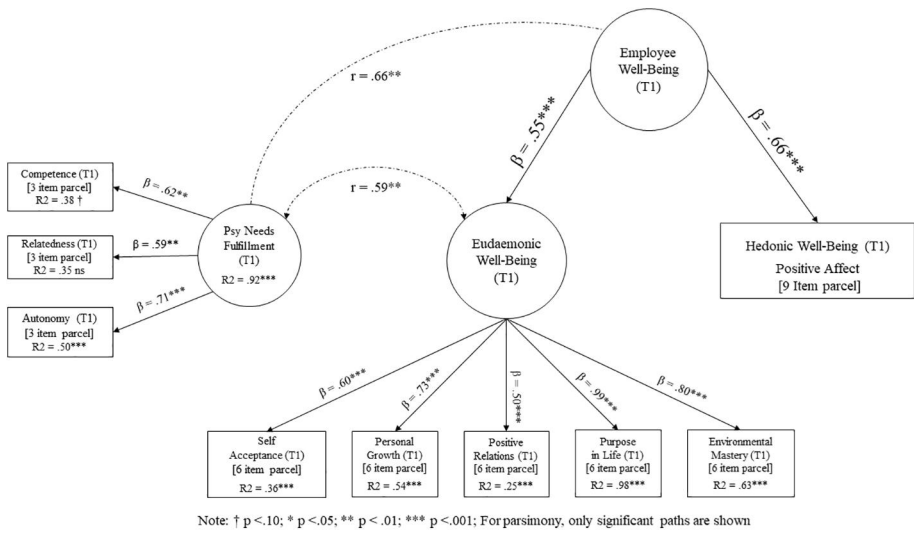


FIGURE 3 Confirmatory factor analysis-pre-intervention (Time 1)

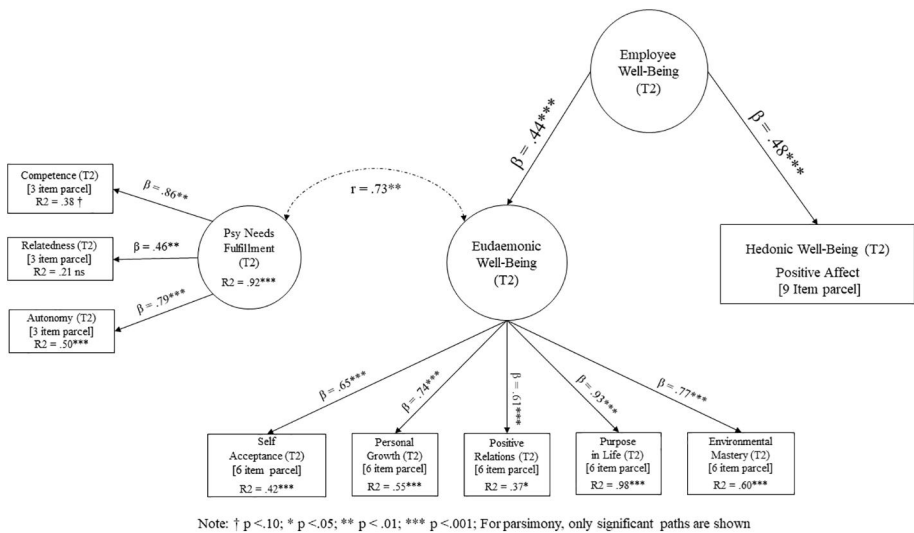


FIGURE 4 Confirmatory factor analysis-post-intervention (Time 2)

$p < 0.15$, $\eta_2 = 0.27$). However, we detected a large within-subjects effect of both in the expected direction of our hypotheses' MBIs (Wilk's $\Lambda = 0.61$, $F[6, 26] = 2.86$ $p < 0.05$, $\eta_2 = 0.39$). These results indicate that both interventions increased participants' hedonic (positive affect) and eudaimonic well-being (PNF and PWB) scores when taken as facets of employee well-being (for estimated marginal means, see Table 3 and Figure 5). Finally, we also detected a large yet marginally significant between-within subject interaction effect (Wilk's $\Lambda = 0.69$, $F[6, 27] = 2.03$, $p < 0.10$; $\eta_2 = 0.31$). This effect indicates significant differences in how MBIs and MSBIs improved all well-being-promoting facets of employee well-being (hedonic and eudaimonic). These results support Hypotheses 2a and 2b.

Finally, univariate analyses only revealed a large and significant between-group effect for hedonic well-being ($F[1, 32] = 5.85$, $p < 0.05$; $\eta_2 = 0.15$), meaning that participants in the MSBI group reported higher scores in positive

TABLE 3 Estimated marginal means, standard errors and 95% confidence intervals

Measure	Condition	Data point	Est. marg. means	SE	95% LLCI	95% ULCI	Univariate analyses		
							B S-E	W S-E	B-W S-E
Eudaimonic well-being									
PWB—self-acceptance	MBI	Time 1	3.00	0.18	2.64	3.36	$F(1, 32) = 3.19^*$	$F(1, 32) = 13.54^{***}$	$F(1, 32) = 0.16$ ns
		Time 2	3.43	0.19	3.05	3.81	$\eta_2 = 0.09$	$\eta_2 = 0.29$	$\eta_2 = 0.01$
	MSBI	Time 1	3.36	0.17	3.01	3.71			
		Time 2	3.88	0.18	3.51	4.25			
PWB—environmental mastery	MBI	Time 1	3.45	0.18	3.08	3.81	$F(1, 32) = 0.57$	$F(1, 32) = 7.56^{***}$	$F(1, 32) = 1.67$ ns
		Time 2	3.52	0.21	3.09	3.94	ns; $\eta_2 = 0.02$	$\eta_2 = 0.19$	$\eta_2 = 0.01$
	MSBI	Time 1	3.51	0.17	3.16	3.87			
		Time 2	3.83	0.20	3.42	4.24			
PWB—positive relations with others	MBI	Time 1	4.18	0.31	3.55	4.80	$F(1, 32) = 0.25$ ns	$F(1, 32) = 0.78$ ns	$F(1, 32) = 4.04^{**}$
		Time 1	4.06	0.29	3.47	4.65	$\eta_2 = 0.01$	$\eta_2 = 0.02$	$\eta_2 = 0.11$
	MSBI	Time 1	3.71	0.30	3.10	4.32			
		Time 2	4.13	0.28	3.56	4.70			
PWB—purpose in life	MBI	Time 1	3.06	0.25	2.55	3.57	$F(1, 32) = 3.79^*$	$F(1, 32) = 2.22$ ns	$F(1, 32) = 0.73$ ns
		Time 1	3.22	0.26	2.69	3.75	$\eta_2 = 0.11$	$\eta_2 = 0.06$	$\eta_2 = 0.01$
	MSBI	Time 1	3.63	0.24	3.14	4.13			
		Time 2	3.90	0.25	3.39	4.41			
PWB—personal growth	MBI	Time 1	3.65	0.28	3.08	4.21	$F(1, 32) = 0.21$ ns	$F(1, 32) = 0.75$ ns	$F(1, 32) = 0.40$ ns
		Time 1	4.04	0.31	3.40	4.68	$\eta_2 = 0.01$	$\eta_2 = 0.02$	$\eta_2 = 0.01$
	MSBI	Time 1	3.93	0.27	3.38	4.48			
		Time 2	4.10	0.30	3.48	4.72			

TABLE 3 (Continued)

Measure	Condition	Data point	Est. marg. means	SE	95% LLCI	95% ULCI	Univariate analyses
Hedonic well-being							
Positive affect	MBI	Time 1	2.36	0.25	1.85	2.87	$F(1, 32) = 5.85^{**}$; $\eta_2 = 0.15$
		Time 2	2.86	0.23	2.38	3.33	$F(1, 32) = 4.86^{**}$; $\eta_2 = 0.17$
Multivariate between-subjects effect	MSBI	Time 1	3.12	0.24	2.62	3.61	
		Time 2	3.53	0.23	3.06	3.99	
Multivariate between-subjects effect		Multivariate within-subjects effect			Multivariate between-within subjects effect		
Wilk's $\Lambda = 0.72$, $F(6, 27) = 1.71$ ns; $\eta_2 = 0.27$		Wilk's $\Lambda = 0.61$, $F(6, 26) = 2.86^{**}$; $\eta_2 = 0.39$		Wilk's $\Lambda = 0.69$, $F(6, 27) = 2.03^*$; $\eta_2 = 0.31$			

Abbreviations: B S-E, between-subjects effect; B-W S-E, between-within subjects effect; MBI, Mindfulness-Based Intervention; MSBI, Mindfulness-Strengths-Based Intervention; W S-E, within-subjects effects.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$.

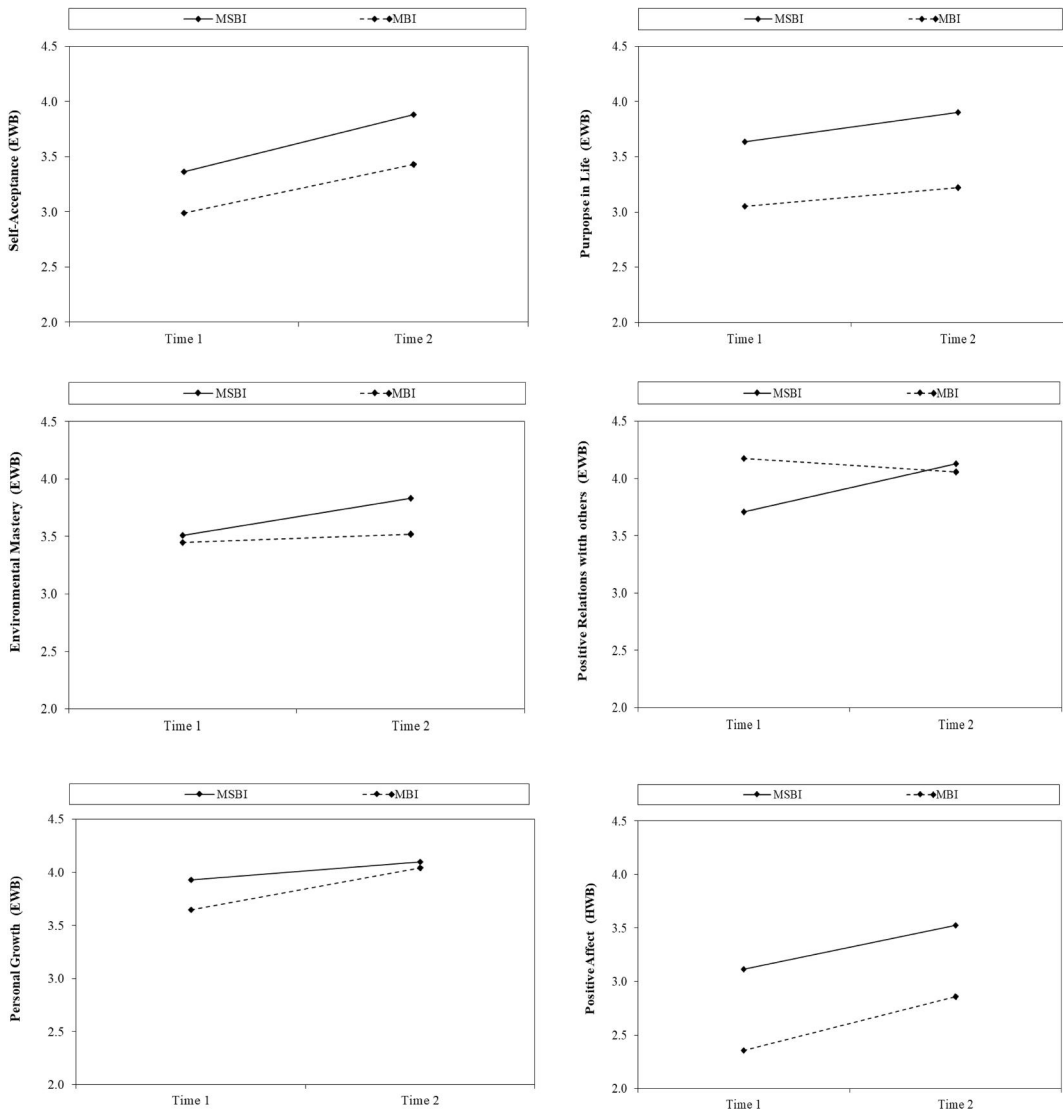


FIGURE 5 Changes in estimated marginal means between pre- (Time 1) and post-intervention (Time 2) for different eudaimonic and hedonic well-being facets

affect than the MBI group ($I-J = 0.71.3$; $SE = 0.29$, $95\% CI = [0.12, 1.30]$, $p < 0.05$; see Table 3 and Figure 5). Our univariate analyses also show that the eudaimonic well-being dimension of Positive Relations with Others had a moderate between-within subject effect ($F[1, 32] = 4.04$, $p < 0.05$; $\eta_2 = 0.11$). Figure 5 shows that whereas participants in the MBI did not report more (or less) positive relations with others due to the intervention, those in the MSBI group did.

8.2.3 | Testing of hypotheses: non-parametric RM-ANOVA

We conducted a set of additional analyses to address a potential concern about our ability to detect medium to small effects with our sample size. We replicated our univariate analyses using a robust, non-parametric repeated-

measures analysis of variance (RM-ANOVA), as implemented in R by the MANOVA.RM package. The MANOVA.RM employs a Monte Carlo approach to calculate SE and 95% CI and outputs a Wald-Type Statistic (WTS) and p -values based on the bootstrapped SE and 95% CI (for a detailed statistical explanation, see Friedrich et al., 2018). We requested the R package to extract 100,000 bootstrapped subsamples for each analysis.

When contrasted against the results shown in Table 3, the result of our robust analyses revealed that in line with our primary analyses Time had a highly significant main effect on Self-Acceptance (WTS = 17.48, $p < 0.0001$), a marginally significant effect on Positive Affect (WTS = 3.75, $p < 0.10$) and no effect on Personal Growth (WTS = 2.44 ns). Further, the robust analyses detected a marginally significant effect on Environmental Mastery (WTS = 3.64, $p < 0.10$), and Purpose in Life became non-significant (WTS = 2.22 ns). Finally, the results for Positive Relations with Others confirmed the statistical significance of the between-within subject effect of MSBI on this facet of eudaimonic well-being (WTS = 4.29, $p < 0.05$).

We suggest a note of caution when interpreting these results, given that the multivariate repeated-measures covariate model (RM-MANCOVA) could not be implemented entirely with this R package. Therefore, these univariate results are based on the actual means and not on the estimated marginal means. Further, these results do not account for the potential effect of other dimensions of a construct (employee well-being) on the dependent variable. Thus, we only consider these results as supplementary to our primary findings.

9 | Discussion

This study had two main goals aimed at leveraging the practice of mindfulness and character development as a way to promote well-being at work. Our first goal, then, was to provide an adjusted summary of the effect sizes of existing first-order meta-analyses summarising the effect of MBIs on different facets of employee well-being. Our literature review revealed that in Western cultures the mainstream MBIs were designed to improve well-being with a well-being-restoration focus (i.e., increase hedonic well-being by reducing negative emotional states; H1) rather than adopting a well-being promotion focus (increase eudaimonic well-being by helping employees to find meaning and purpose in their work; H2a, H2b). Consequently, our first hypothesis predicted that extant MBIs would have stronger effects on employees' hedonic well-being (reducing distress) than on eudaimonic well-being criteria. The results of our 'bare bones' second-order meta-analysis revealed that after correcting for sampling error extant MBIs were more effective in reducing negative states such as distress ($g = -0.74$) than in fostering eudaimonic well-being criteria ($g = 0.58$). Hence, our results provide support for our first hypothesis.

Our study's second goal was to test an alternative MBI approach that might compensate for the displeasure reduction approach of extant MBIs. To this end, we tested an intervention based on Niemiec's (2014) MSBP, which combines mindful meditation, mindful living and character-strengths interventions. The idea of this intervention is to direct one's experiential awareness to embrace one's 'strengths' rather than to accept one's 'weaknesses'. Despite this attractive proposition, the studies testing Niemiec's MSBI have several design flaws that our study aimed to address.

To address such design flaws, we conducted a field experiment in a small Spanish healthcare organisation. Our field experiment compared how Niemiec's MSBI performed against a traditional MBI on improving several facets of employee well-being (hedonic and eudaimonic). Given the MSBI's 'strengths promotion focus', our second hypothesis predicted that the change between pre-treatment and post-treatment scores of hedonic and eudaimonic well-being would be higher in the MSBI group than in the MBI group. Our results revealed that, as expected, both intervention types substantially increased employees' hedonic and eudaimonic well-being. Still, participants in the MSBI group reported higher absolute scores in all employee well-being criteria (one facet of hedonic well-being and five facets of eudaimonic well-being). Consequently, our results also supported our second hypothesis.

9.1 | Theoretical implications

In the present study, we grounded our hypothesis on Good et al.'s (2016) framework of mindfulness at work. For 'future research directions', these authors propose exploring how mindfulness can enhance employee resilience, as a form of psychological capital (Luthans et al., 2007). However, even when considering well-being, these authors still see mindfulness as a well-being-restoring practice rather than a well-being-promoting practice. In our work, we took the opposite approach, mainly by comparing the well-being-promoting properties of MBIs and MSBIs. As a result, our findings help to advance the Job-Demands Resources (JD-R) theory.

In a recent conceptual paper, Bakker and Van Woerkom (2018) make the case that strengths in general, but character strengths in particular can be understood as personal resources. By leveraging their strengths, employees are better equipped to deal with their daily demands and remain engaged at work. In this work, these authors call for field experiments that clarify how individuals can discover and enact their strengths. We believe that our findings contribute to answer such a question, by evidencing how a mindful use of strengths builds personal resources. Further, we support these authors' claims with evidence, given that in our field experiment, the enactment of character strengths (taken as personal resources) lead to flourishing at work as proposed by JD-R theory. However, while we controlled for initial levels of PNF, future studies should use a similar approach to explore whether if the effect of an MSBI is more effective than an MBI in employees with high baseline levels of well-being.

A second 'open question' in Good et al.'s (2016) review was whether the practice of mindfulness at work could have effects on workplace climate. Our study did not measure group processes and emerging states (e.g., conflict management, psychological safety, trust) nor outcomes (team performance). However, our MSBI group participants reported a substantial increase in their ability to establish positive relations with others. Whereas we cannot claim that our MSBI will enhance group-level processes, when connecting our findings to Mathieu et al.'s (2008) IMO model of team effectiveness, we could argue that our MSBI improves a team's individual inputs (i.e., what each team member brings to a team). In other words, the strengths of Kindness, Love and Gratitude and their ability to establish positive relations with others should act as individual-level inputs that increase the likelihood for positive group processes and emerging states to appear in work teams. Again, future studies should explore this proposition using multi-level and longitudinal designs.

MSBIs might not only have implications for employee well-being but for their firms as well. Organisations whose employees can direct and sustain their attention more efficiently, positively relate to their peers, and experience a sense of meaningfulness in their activities should likely create a work culture that retains talent. However, employees who are cynical are constantly distracted and display counterproductive work behaviours due to stress and burnout. Thus, embedding mindfulness and character in HRM's efforts to promote well-being at work seems a winning formula to create a healthy work environment that promotes effective teamwork and sustains organisational excellence.

9.2 | Implications for practice

After reading the present study, HRM might understand better why investing in promoting well-being at work matters. Employees tend to expect more from employers than just a pay check; they look to their jobs to experience pleasurable states and commit to those firms that also provide opportunities to find purpose at work. Our study provides HRM with a cost-effective intervention that can improve their employees' eudaimonic well-being (e.g., increasing employees' sense of meaning, purpose and personal growth). The relatively straightforward design of our interventions makes the implementation of an MSBI easy, even in small and medium firms. This ease of implementation seems highly relevant in the current uncertain economic context, where small firms might suffer reductions in their budget allocations for activities that promote employee well-being. HR practitioners can inspect our Appendix 1 and tailor our MSBI to their firm's specific needs.

9.3 | Limitations and future research

This study is not without some limitations. First, an important caveat of our 'bare bones' second-order meta-analysis is that we cannot ensure that the assumption of independence was fulfilled. This assumption requires that the first-order meta-analyses included in the second-order meta-analysis will not share their primary studies. In this regard, Schmidt and Oh (2013) acknowledged that it might be unrealistic to expect this assumption to be fully fulfilled and showed an example in which this assumption is relaxed. In any case, we caution our readers not to overstate nor exaggerate our findings regarding our second-order effect sizes. A more comprehensive second-order meta-analysis would be highly informative for practitioners interested in developing efficient MBIs and for researchers to adequately calculate their sample sizes.

Our field experiment also has some limitations that future studies should address. First, as one anonymous reviewer pointed out, this study neither had a 'pure' control condition nor a robust manipulation check. In hindsight, we could have employed a self-report measure of mindfulness before and after the intervention to measure changes in mindfulness (Kiken et al., 2015). Similarly, we could have compared changes in character-strengths scores across conditions before and after the MSBI. Finally, we acknowledge that our study's field experimental nature prevented us from implanting all the controls that would have been available in a laboratory study (Podsakoff & Podsakoff, 2019). However, scientific progress is a cumulative effort. Thus, as our study aimed to address the limitations of pilot studies testing MSBIs (Niemiec & Lissing, 2016), we call future studies to address our work's limitations.

Similarly, the present study made a consistent effort to avoid bias sources in social sciences (e.g., testing the impact of an exogenous instrument and using a longitudinal design). Nevertheless, all our dependent variables were self-reported by participants. Whereas perceptions may be more important than objective data to understand what people feel, think, and do (Cascón-Pereira & Hallier, 2011). Future research might want to triangulate self-report data with other methods, such as, combining psychological and physiological measures (e.g., heart-rate variability, sleep pattern analyses, etc.) to measure better employee well-being. Second, our sample has some limitations, as it consisted of female registered nurses from a small healthcare organisation, and, thus, other professions were not represented in our study. Our sample's second issue was its relatively small size, in part because our data collection efforts were limited due to external constraints, mainly, the COVID-19 global pandemic.

A third limitation involves the activities involved in our MBI and MSBI interventions. It would be desirable to rely on interventions with more sessions and a more comprehensive range of activities. Further, employing a follow-up system of evaluation that examines whether the observed effects decay after several months would be beneficial to test the persistence of MBIs and MSBIs (Pang & Ruch, 2019). Such a follow-up system would allow researchers to examine whether the effects of an MBI alone on employee well-being declines faster than the effects of an MSBI intervention.

10 | CONCLUSION

The present study shows initial evidence that a variation of Niemiec's (2014) MBSP, the MSBI, is a cost-effective way of promoting employee well-being. Further, it shows that it can simultaneously create enjoyment (hedonic well-being) and a sense of purpose (eudaimonic well-being) in healthcare employees. By enhancing awareness of one's strengths, employees can find new personal resources to find renewed excitement and meaning in their work tasks. Thus, by promoting well-being at work, HRM can help their firms 'do well by doing good for their employees'.

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CONFLICT OF INTEREST

All authors declare not having any conflict of interest regarding the present study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available at https://osf.io/q3phb/?view_only=6855880e05b7416db96eb3220892d104.

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SUPPORTING INFORMATION

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

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APPENDIX I

SUMMARY OF MINDFULNESS-BASED INTERVENTIONS

Study intervention

Our literature review shows that the positive effects of Mindfulness-Based Interventions (MBIs) on both hedonic and eudaimonic well-being have been well documented. Thus, in our intervention, the MBI group only participated in mindfulness activities in line with the approach proposed by Kabat-Zinn (1982). After eight sessions, all participants completed the same self-report measures to test any variation in scores due to the intervention (Time 2). The MSBI intervention was adapted from Niemiec's (2014) programme (Mindfulness-Based Strengths Practice; MBSP). Table A1 describes the scope and content of the activities presented to the MBI and MSBI groups.

Table A1 shows the progression of the eight sessions of the MSBI and MBI interventions. At the beginning of the study (Time 1), all participants completed our self-report measures and again after Session 8 (Time 2). Our self-report measures included our control variable (Psychological Needs Fulfilment [PNF]), one scale measuring hedonic well-being (Positive Affect [PA]), and five scales measuring eudaimonic well-being (Psychological Well-being dimensions). After completing the scales, participants were randomly assigned to each group; the VIA-IS (Values in Action—Inventory of Strengths; Peterson & Seligman, 2004) was used to rank participants' character signature strengths in the MSBI group.

Each session lasted 75 min for both intervention groups. During the last 10 min of each session, participants were asked to think about (MBI) or discuss (MSBI) and plan how to exercise mindfulness (MBI) and character strengths (MSBI) in the time between sessions. Consequently, Sessions 2–8 started with a group conversation, in which the facilitator inquired about how participants applied the insights and learnings from the prior session between sessions (15 min). Both groups would occupy the first remaining 20 min of each session with a mindfulness activity that allowed participants to enter a mindful state (Breathing, Body Scan, etc.). However, during the remaining 30 min, the MBI group would conduct another activity related to the practice of mindfulness, while the MSBI would switch to a character strengths-based activity.

During the first session ('Introduction to Mindfulness'), both groups were given a brief introduction to the practice of mindfulness, its origins and benefits (15 min). For both groups, the first activity consisted of a mindful breathing exercise. This activity aimed to help participants practice attentional decentring by focusing on their breathing (Feldman et al., 2010). Immediately after, participants of the MSBI group received a report describing their signature strengths, and the nature of each character strength was explained (30 min). Meanwhile, participants in the MBI group further exercised their breathing focusing their attention on the upper torso and abdomen. Before concluding the first session, both groups discussed an action plan to exercise either mindful breathing alone (MBI group) or mindful breathing in combination with a character strengths activity in the time between sessions (15 min). As they exited the premises where the interventions were conducted, participants were encouraged not to discuss the intervention or action plan's content with the participants of the other intervention group (to prevent socialization).

Session 2 ('The 7 Attitudes of Mindfulness') was conducted in the same format as Session 1 for MSBI and MBI groups. After the initial feedback activity, both groups conducted a mindful body scan activity for 20 min to facilitate the exercise of attentional control (Call et al., 2014). During the next 30 min, the MSBI group listened to a presentation about how character strengths mutually support each other to prevent virtues from becoming vices (due to overuse or underuse of character strengths; Niemiec et al., 2012). Both groups concluded the session with an action plan to exercise mindfulness (and character strengths in the MSBI group) between sessions.

In Session 3 ('Mindful Relations'), immediately after the feedback activity that started each session, participants were asked to work in pairs and engage in mindful hugs with other participants, switching participants during the activity (20 min for the MSBI group). Before starting, the instructor asked whether participants were comfortable conducting this activity. Participants were offered a non-judgmental opt-out if uncomfortable. No participant requested to opt-out of this exercise. This activity aimed to help participants exercise directing their attention

towards their bodies (and their partners' bodies) and the emotions arising from a mindful hug. For the following 30 min, the MSBI group conducted a group discussion in which one participant sat on a chair surrounded by other participants. The surrounding participants provided examples of how the chair participant displayed their signature strengths of character in the times between sessions. Meanwhile, the MBI group worked in pairs and discussed in turns how their actions might impact others. Again, during the remaining 15 min of the session, both groups were asked to discuss a plan to exercise mindfulness (MBI) and their character strengths (MSBI).

After the initial feedback, the activities in Session 4 ('Sharpening the Senses') were aimed at developing attentional control in the MBI group and supporting attentional control with the character strength of Curiosity for the MSBI group. We employed olfactory stimuli, given that this type of stimuli activates deep brain structures and can trigger memories (Cann & Ross, 1989) and instil curiosity directed towards the source of the stimuli (Orth & Bourrain, 2005). After the mindful smelling activity, the MSBI conducted a group dynamic to explore their workspace and find resources to complete the activity's challenges for the remaining 30 min of the session before discussing their action plan for the time between sessions. Meanwhile, in the MBI group, the facilitator engaged the group in a conversation about how 'sharpening the senses' acts as a pathway to shifting cognitive processing towards experiential processing.

During Session 5 ('Mindful Exploration'), both groups conducted a guided meditation focused on exploring latent strengths through introspection. This activity aimed to direct participants' mindful attention towards the discovery of latent psychological strengths. For the MSBI group, the remaining 30 min were dedicated to activities aimed to exercise the strength of Zest. The strength of Zest was developed in three ways: leveraging the energising power of brief Yoga exercise (Kabat-Zinn, 1982), connecting with nature outside the office (Unsworth et al., 2016) and inspirational storytelling (Lambert et al., 2011). The MBI group conducted a similar exercise but without the inspirational storytelling component. Instead, they were asked to engage in mindful awareness through a walking meditation, as practice for directing their awareness to their environment, even its small details.

The goal of the first mindfulness activity of Session 6 ('Breathing Space') was to direct attention towards existing emotional connections with significant others (Stewart et al., 2018). During the remaining 30 min, the MSBI group conducted activities focused on the strength of Love (as defined by Peterson & Seligman, 2004). Again, a participant sat in a chair, while the rest of the participants sat around him or her. The facilitator asked them to meditate in silence about the chair participant's positive attributes and then communicate said positive attributes to the chair participant. Instead, the MBI group conducted a guided meditation exercise.

The mindfulness activity of Session 7 ('Mindful Branding') consisted of guided meditation. This activity's goal was to direct participants' conscious awareness of the human and material resources around them. By increasing awareness of said resources, participants in both conditions felt more prepared to cope with contextual stressors. In the following 30 min, participants in the MSBI group supported the meditation with activities aimed at exercising the strength of Gratitude. To this end, participants wrote a letter to a fellow participant for whom they were grateful but to whom they had not expressed gratitude. Meanwhile, the MBI group engaged in a mindful branding exercise. The MBI group focused on their psychological strengths and wrote a letter to themselves explaining their unique qualities for which they should be grateful.

Finally, the mindfulness component of Session 8 ('Mindful Living') consisted of a meditation directing attention to the benefits of exercising mindfulness in everyday life. This activity aimed to raise awareness of any improvement in human functioning that resulted from the intervention. During the following 30 min, the MSBI group participants exercised the strength of Hope by conducting an appreciative inquiry activity (Krasner et al., 2009). By focusing their mindful awareness on the things that made participants hopeful, they could envision a better state of affairs for themselves and their colleagues. Meanwhile, after the guided meditation, participants in the MBI group were asked to share how they envisioned their future selves if they exercised a mindful awareness habitually. Both groups were encouraged to set short-term goals and consolidate them into an action plan to transfer their learning into their day-to-day activities (see Table A1).

Sample instructions for MBI and MSBI field experiment conditions

Session 2: Mindfulness-Strengths Based Intervention (MSBI) Group: 'Strengths in Balance Example and Exercise'.
Phase 1: Entering a mindful state through a body scan exercise.

Phases	Facilitator's instructions to perform the exercise
1. Body scan-Preparation I	'Find a quiet space in the room. Using a cushion, sit straight but not stiff. Now allow your head and shoulders to rest comfortably. If you wish, place your hands on the top of your legs with the upper arms at your side'.
2. Body scan-Preparation II	'Now, please close your eyes and take a deep breath. Feel the fall and rise of your chest and how your belly expands and contracts with every breath. For each breath, now notice the coolness of the air as it enters your lungs and its warmth as it exits your lungs'. 'Do not try to control your breath, but just allow it to flow'.
3. Body scan-Preparation III	'Please notice that as you focus your attention on your breath, wandering thoughts might appear in your mind. Acknowledge them, but do not pass judgment on them.' 'Whenever this happens, just focus again on your breathing.' 'Whenever you feel an emotion arising, acknowledge it, but again, re-direct your attention towards your breathing'.
4. Body scan: Head and neck	'Now, please direct your awareness to different parts of your body, starting with your entire head and face, notice the weight you might feel, any temperature or any sensations...Do they feel alert? Muted? Something else? Simply noticing.' 'Lower your attention now to the throat and neck. Notice any sensations about the weight. Does it feel heavy or tense? Now focus on your arms and shoulders... Are they light, are they heavy?'
5. Body scan: Hands	'Now, lower your attention to your hand... Do you feel them as cold or warm? Do you notice your fingers vibrating, with blood flowing through your hands... Are they quieter? Does any sensation stand out?' 'Acknowledge such sensations'.
6. Body scan: Upper core	'Now, direct your curious and kind attention to your whole torso. Chest, ribs, belly, the back; the entire circumference of your torso... Notice the breath coming in and out of your torso. Much of the organic body is housed here... Stomach, lungs, intestine, liver, pancreas... Does this attention allow you to discover any sensations that stand out from the inner parts of your body?'
7. Body scan: Legs and feet	'And now gently direct your attention to your legs and pelvis... Notice the quality of your hips and pelvis resting. Do you notice balance and symmetry? Do not judge... just be aware. Any specific sensation in the legs? Now let your attention drift all the way to your feet... What is their temperature, weight? Do they feel quieter?'
8. Body scan: Full body	'As you move your attention across your body, now focus on your full body as a whole. Can you feel the form of it resting here? Is there an overall texture or tone to the body? Notice if you experience your body as a whole ... Experience how it feels to experience your whole body... Do you experience a closer connection between your mind and body? ... Give a couple of cycles of breath to notice your full body... stretch the body... maybe move the arms beside your ears... prepare to move with connection and awareness into what's next...'

Phase 2: Understanding the overuse and underuse of character strengths (example from the facilitator profile).

Signature strength	Underuse	Overuse
1. Social intelligence	Clueless; disconnected; socially naïve; emotionally insensitive	Over-analytical; self-deception; overly sensitive
2. Leadership	Follower; compliant and mousy; passive	Bossy; controlling; authoritarian
3. Humour	Overly serious; stilted/stiff; flat affect	Tasteless/Offensive; giddy; socially inappropriate
4. Hope	Negative; pessimistic; past-oriented; despair	Unrealistic; pollyannaish; head in the clouds; blind optimism
5. Honesty	Phony; dishonest; inauthentic; lacking integrity	Self-righteous; rude; inconsiderate

Phase 3: Understanding the overuse and underuse of character strengths (example from the facilitator profile).

Phases	Facilitator's instructions to perform the exercise
1	<p>'Please analyze any past work situations where you have underused some of your character strengths'. 'Would anyone like to share their experience?'</p> <p>[To the group]: 'Remember that we will try to remain in a mindful state, of non-judgmental awareness... The goal is not to pass judgment but to enhance the daily practice of our strengths and to find new and better ways to develop our character strengths'.</p> <p>After moderating the conversation and discussing a few examples, the facilitator moves to the overuse of strengths.</p>
2	<p>'Now, please think about past work situations where you might have overused some of your strengths'. 'What did you learn from this experience?'</p> <p>[The facilitator is expected to sustain the mindfulness state by preventing conversations from becoming arguments, monologues, or judgmental statements].</p>
3	<p>'Finally, let's think about a time in which you did not underuse or overuse your strength. I am referring to a situation when your behavior remained within the golden mean.' 'How did you feel? How did other people feel?'</p> <p>[The facilitator is expected to end this activity on a positive note, helping participants direct and sustain their experiential attention to their signature strengths].</p>

APPENDIX II

OVERVIEW OF CONFIRMATORY FACTOR ANALYSES

Model descriptions

We constructed four CFA models for Time 1 (Models A1–A4) and four models for Time 2 (B1–B4), respectively. We used the traditional goodness of fit indicators proposed by Cheung and Rensvold (2002). Table A3 shows all models' goodness of fit results. In addition to the chi-square test, we report the χ^2/df ratio; the comparative fit index (CFI); the non-normative fit index, or Tucker–Lewis indicator (TLI); the standardized root-mean-square residual (SRMR); and the weighted root-mean-square residual (WRMR). RMSEA scores below 0.10 alongside CFI and TLI scores

TABLE A1 Comparative table for MBI and MSBI field experiment conditions

Session	Mindfulness-Based Intervention (MBI)			Mindfulness-Strengths-Based Intervention (MSBI)		
	Activity	Min	Detailed description	Activity	Min	Detailed description
Session 1: Introduction to mindfulness-based interventions	Introduction	15'	Introduction to mindfulness.	Introduction	15'	Introduction to mindfulness.
	Mindful breathing	20'	Practices: Participants were present and let go of any thought, paying attention only to breathing.	Mindful breathing	20'	Participants conducted the same exercise as those in the MBI group.
	Focused breathing exercise: Upper Torso	30'	Appreciating the air when inhaling and exhaling, filling the abdomen and chest to a greater or lesser extent.	<p>Presentation: <i>Introduction to Character Strengths (VIA)</i></p> <p>Participants' Survey feedback (VIA 360 – IS)</p>	30'	Participants received a document where their signature strengths were included, and their 24 strengths, ranked in order of importance (participants previously responded to the VIA-IS; Peterson & Seligman, 2004). A strengths group workshop was conducted to explain the document.
	Action plan for the week	10'	Discussion and action plan for between sessions.	Action plan for the week	10'	Discussion and action plan for between sessions.
Session 2: The 7 Attitudes of mindfulness	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness between sessions.	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness and character strengths between sessions.
	Body scan exercise (see example in Table A2)	20'	Exercise: Body Scan beginning with conscious breathing and gradually directing attention to each part of the body, starting at the head and ending at the feet.	Body scan exercise	20'	Participants conducted the same exercise as those in the MBI group.

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)		Mindfulness-Strengths-Based Intervention (MSBI)	
	Activity	Min	Activity	Min
	Presentation: <i>Information about the seven attitudes of mindfulness</i>	30'	Presentation: <i>"Strengths in Balance": Information on overuse and underuse of character strengths</i>	30'
	Action plan for the week	10'	Action plan for the week	10'
Detailed description		Oral presentation about the seven attitudes of mindfulness (non-judging, patience; beginner's mind, trust, non-striving, acceptance, and letting go; based on Kabat-Zinn, 1982).	Oral presentation regarding the overuse and underuse of character strengths and delivery of a document with the overuse and underuse of their signature strengths. (Freidlin et al., 2017). Exercise on past experiences (see Table 2).	Discussion and action plan for between sessions.
Cont'd				
Session 3: Mindful relations	Participants' feedback	15'	Participants' feedback	15'
	Mindful hug exercise	20'	Mindful hug exercise	20'
	Mindful relations exercise	30'	360 VIA exercise Small-group exercise <i>Peers' strength-Based feedback</i>	30'
Detailed description		Feedback discussion about the exercise of mindfulness between sessions. Practices: Embracing a colleague and hugging each other and observing their thoughts, as well as their own body and partner response.	Feedback discussion about the exercise of mindfulness and character strengths between sessions. Participants conducted the same exercise as those in the MBI group.	Each participant sat in a chair located in the middle of the room, while the remaining participants indicated one of his/her character strengths. This exercise involved providing examples that participants recorded in a "strengths diary" over the past week about how this person had used such strengths (Lottman et al., 2017).

(Continues)

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)		Mindfulness-Strengths-Based Intervention (MSBI)	
	Activity	Min Detailed description	Activity	Min Detailed description
	Action plan for the week	10' Discussion and action plan for between sessions.	Action plan for the week	10' Discussion and action plan for between sessions
Session 4: Sharpening the senses	Participants' feedback	15' Feedback discussion about the exercise of mindfulness between sessions.	Participants' feedback	15' Feedback discussion about the exercise of mindfulness and character strengths between sessions.
	Mindful smelling	20' Mindfully smelling the scents around them and reaching for them with their awareness. Closing their eyes and fixing their attention fully, letting out the thoughts that go through their head (past, future, etc.).	Mindful smelling	20' Participants conducted the same exercise as those in the MBI group.
	Sharpening the senses	30' Group conversation about the benefits of sharpening the senses as a pathway of experiential processing.	Super strengths Module 1: Curiosity Small-group dynamic Ludic activities	30' The strength of "curiosity" refers to taking an interest in ongoing experiences for their own sake, exploring and discovering. Participants learned and improved their curiosity through actively exploring their workspace to find clues necessary to gain points and win the different games within different game activities.
	Action plan for the week	10' Discussion and action plan for between sessions.	Action plan for the week	10' Discussion and action plan for between sessions.

Cont'd

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)		Mindfulness-Strengths-Based Intervention (MSBI)	
	Activity	Min	Activity	Min
Session 5: Mindful exploration	Participants' feedback	15'	Participants' feedback	15'
	Detailed description	Feedback discussion about the exercise of mindfulness between sessions.	Detailed description	Feedback discussion about the exercise of mindfulness and character strengths between sessions.
	Guided meditation: Psychological Strengths	20'	Guided meditation: Psychological Strengths	20'
	Detailed description	Participants conducted a scan of their psychological strengths, following the same logic as the body scan activity.	Detailed description	Participants conducted the same exercise as those in the MBI group.
	Walking meditation exercise	30'	Super strengths module 2: Zest Small-group dynamic:	30'
	Detailed description	Participants performed physical activities that involved going outside their office (Physical activity; Lambert et al., 2011) and guided yoga exercises (Kabat-Zinn, 1982). A walking meditation acted as a metaphor for exploring one's inner world. As participants walked around, they were asked to be mindful of their surroundings and to notice even the little details around them.	Detailed description	The character strength of Zest captures behaviors and states related to approaching life with excitement and energy; feeling alive and activated in addition to activities of the MBI condition, participants conducted various exercises aimed at boosting their energy and vitality. For example, asking each individual to share with the group their most fulfilling work experience over the past week (inspirational storytelling).
	Action plan for the week	10'	Action plan for the week	10'
	Detailed description	Discussion and action plan for between sessions.	Detailed description	Discussion and action plan for between sessions.

(Continues)

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)			Mindfulness-Strengths-Based Intervention (MSBI)		
	Activity	Min	Detailed description	Activity	Min	Detailed description
Session 6: Breathing space	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness between sessions.	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness and character strengths between sessions.
	Mindful breathing exercise	20'	Practices: Participants were present and let go of any thought, paying attention only to breathing.	Mindful breathing exercise	20'	Participants conducted the same exercise as those in the MBI group.
	Guided conversation: <i>Breathing Space</i>	30'	Participants were asked to tune mentally with a significant other and recall an experience of deep connection with this special person.	Super strengths Module 3: <i>LoveSmall-group dynamic: Positive attribute appraisal</i>	30'	The character strength of "Love" refers to attitudes such as valuing close relations with others, in which sharing and caring are mutually reciprocated. One participant sat in the middle of the group and the rest of the group practiced loving kindness meditation by breathing deeply and visualizing all the positive attributes of the person sitting in the middle following guided instructions; at the end, they expressed those positive attributes to their work colleagues.
	Action plan for the week	10'	Discussion and action plan for between sessions.	Action plan for the week	10'	Discussion and action plan for between sessions.
Session 7: Mindful branding	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness between sessions.	Participants' feedback	15'	Feedback discussion about the exercise of mindfulness and character strengths between sessions.
	Guided meditation: <i>Reflecting on acceptance</i>	20'	Participants were asked to breathe mindfully and to connect deeply with present selves.	Guided meditation: <i>Reflecting on acceptance</i>	20'	Participants conducted the same exercise as those in the MBI group.

Cont'd

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)		Mindfulness-Strengths-Based Intervention (MSBI)	
	Activity	Min	Activity	Min
	<p>Activity: <i>Mindful Branding</i> Individual exercise: <i>Open letter to self</i></p>	30'	<p>Activity: Super strengths Module 4: <i>Gratitude</i> Small-group dynamic: <i>Open letter to other</i></p>	30'
		<p>Participants were asked to concentrate on their breathing and direct their mindful attention towards their present selves and discover things for which they were grateful. Immediately after, the participants engaged in mindful branding, that is, discovering the unique qualities of their personal brand and writing a letter to themselves explaining such qualities.</p>		<p>The strength of "gratitude" refers to being aware of and thankful for the good things that happen; taking time to express thanks. Participants developed the strength of gratitude through the exercise of writing a brief letter to a colleague for whom they were especially grateful, and whom they had not properly thanked. At the end of the exercise, each person had to read aloud the gratitude letter and deliver it to the recipient.</p>
	Action plan	10'	Action plan	10'
		Discussion and action plan for between sessions.		Discussion and action plan for between sessions.
Session 8: Mindful living	<p>Participants' feedback</p> <p>Guided meditation: <i>Envisioning the future</i></p>	15'	<p>Participants' feedback</p> <p>Guided meditation: <i>Envisioning the future</i></p>	15'
		<p>Feedback discussion about the exercise of mindfulness between sessions.</p> <p>Directing attention to the benefits of focusing on possible futures and especially to desired ones.</p>		<p>Feedback discussion about the exercise of mindfulness and character strengths between sessions.</p> <p>Participants conducted the same exercise as those in the MBI group.</p>

(Continues)

TABLE A1 (Continued)

Session	Mindfulness-Based Intervention (MBI)			Mindfulness-Strengths-Based Intervention (MSBI)		
	Activity	Min	Detailed description	Activity	Min	Detailed description
	Mindful living exercise	30'	Participants were asked to mindfully share with the group how they had been bringing awareness to their use of mindfulness in their everyday routines, considering all the many ways mindfulness can improve their life.	Super strengths Module 5:Hope Individual work Appreciative inquiry	30'	The strength of "Hope" captures positive expectations about the future; optimistic thinking and focusing on good things to come. Participants were asked to mindfully share with the group how they had been bringing awareness to their use of the strength of hope in their everyday routines, considering all the many ways in which using their character strength mindfully can improve their life.
	Intervention wrap-up	10'	Final discussion and setting of short-term goals to put into practice in the near future what they have learned about mindfulness and its exercise at work.	Intervention wrap-up	10'	Final discussion and setting of short-term goals to put into practice in the near future what they have learned about character strengths & mindfulness and the use of it at work.

TABLE A2 Confirmatory factor analysis, model fit, and Goodness of fit indicators (N = 35)

Model A – Pre-Intervention	χ^2	df	χ^2/df ratio	RSMEA	CFI	TLI	SRMR
Null model	180.57*	36	2.80	-	-	-	-
A1. One factor (WB)	40.15*	27	1.48	0.12	0.91	0.88	0.08
A2. Two factors (HWB; EWB + PNF)	40.15*	27	1.48	0.12	0.91	0.88	0.08
A3. Higher-order factor (Employee Well-being) + two factors (HWB and EWB) + one factor (PNF)	34.36 ns	25	1.37	0.10	0.93	0.90	0.08
A4. Three related factors (HWB, PWB and PNF)	43.45 ns	25	1.74	0.14	0.87	0.82	0.08
Model B – Post-intervention	χ^2	df	χ^2/df ratio	RSMEA	CFI	TLI	SRMR
Null model	152.30*	36	2.73	-	-	-	-
B1. One factor (WB)	39.61 ns	27	1.47	0.12	0.89	0.85	0.07
B2. Two factors (HWB; EWB + PNF)	39.61 ns	27	1.47	0.12	0.89	0.85	0.07
B3. Higher-order factor (Employee Well-being) + two factors (HWB and EWB) + one factor (PNF)	29.30 ns	25	1.17	0.07	0.96	0.95	0.06
B4. Three related factors (HWB, PWB, & PNF)	32.09 ns	25	1.14	0.09	0.94	0.92	0.06

Note: Given our relatively small sample size, the MLR was used, a robust estimator for all analyses. Moreover, to reduce the N/parameter ratio, we parceled our exogenous indicators (items) into one indicator per scale dimension (Little et al., 2009).

Abbreviations: EWB, eudaimonic well-being; HWB, hedonic well-being; MLR, maximum likelihood—robust; WB, well-being; PNF, psychological needs fulfillment; PWB, psychological well-being.

above 0.90 are deemed acceptable fit indicators, whereas RMSEA scores below 0.08 alongside CFI and TLI above 0.95 would indicate a good fit of the model (Cheung & Rensvold, 2002).

Further, given our relatively small sample size, we chose the MLR (maximum likelihood—robust) as our model estimator. Simulation studies show that the MLR is a robust estimator that performs well when conducting analysis when variables are non-normally distributed and when samples are relatively small (Li, 2016). Moreover, to reduce the N /parameter ratio, we parcelled our exogenous indicators (items) into one indicator per scale dimension (Little et al., 2009).

We conducted confirmatory factor analyses for our pre- and post-intervention measures. First, we tested a model with all items loading on a single factor (employee wellbeing—Models A1 and B1, respectively). Then we tested a second model that consisted of a hierarchical two-factor model with PNF and PWB loading into a latent, first-order construct (eudaimonic well-being) and PA acting as an indicator of hedonic well-being. Both hedonic and eudaimonic well-being were set to load into employee well-being (second-order, latent construct—Models A2 and B2, respectively). We then tested an alternative hierarchical model, where PA was again taken as a parcelled indicator of hedonic well-being, five facets of PW were taken as parcelled indicators of eudaimonic well-being, and the two first-order factors (hedonic and eudaimonic well-being) loaded into employee well-being (second-order construct—Models A3 and B3, respectively). However, in this alternative hierarchical model, PNF was modelled as an independent, first-order latent construct and was allowed to correlate with eudaimonic well-being and employee well-being. Finally, we tested a fourth model consisting of three interrelated factors, where PA, PNF and PWB were set to correlate (Models A4–B4). To test model fit, we used the goodness of fit indicators proposed by Cheung and Rensvold (2002).