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Effectiveness of Mindfulness and Strengths in Daily Life Program for University Student Wellbeing and Stress Reduction

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Abstract

University students globally face increasing mental health challenges, underscoring the urgent need for effective wellbeing interventions. This study evaluated the impact of the Mindfulness and Strengths in Daily Life (MSDL) Program, which is based on the Mindfulness-Based Strengths Program (MBSP), on subjective wellbeing, psychological wellbeing, perceived stress, mindfulness state, and character strengths use. A quasi-experimental pre-post design was implemented with 774 university students from a Latin American institution. Paired-samples t-tests revealed significant improvements across all measured variables for the full sample: mindfulness state and character strengths use significantly increased, as did subjective and psychological well-being, while perceived stress substantially decreased. Subgroup analyses demonstrated that the MSDL was beneficial across all demographic and delivery modalities. Notably, participants with minimal prior knowledge of mindfulness or character strengths experienced larger positive effects, and the self-directed modality showed a tendency for slightly greater gains. These findings provide robust evidence for the MSDL's effectiveness in enhancing student wellbeing and reducing stress in higher education, highlighting its potential for scalable implementation in diverse cultural contexts, particularly for those new to these practices.

Keywords: Mindfulness-Based Strengths Practice (MBSP), Mindfulness and Strengths in Daily Life (MSDL), Character strengths intervention, Wellbeing.

Declarations

Ethical Approval. This study was reviewed and approved by the Postgraduate Directorate of the Academic Vice-Rectorate ethics oversight body at Universidad Tecmilenio (led by Dr. Maria Eugenia Castillo Torres), in collaboration with the Social Impact Area and the Content Design Department of the Institute of Purpose and Integral Wellbeing. The study was conducted in accordance with the Code of Ethics for Psychologists issued by the National Federation of Psychologists of Mexico (2018). Given its classification as a minimal-risk

educational assessment utilizing de-identified data, formal review by an external Institutional Review Board (IRB) was not required.

Consent to Participate. Informed consent was obtained from all participants prior to participation in the study. Although no formal written informed consent, specific to a research protocol, was obtained because the data collection was embedded in program evaluation, all students were explicitly informed that their responses would be used in de-identified and aggregated form to assess the impact of the course on wellbeing-related outcomes. Participation was voluntary, and students could withdraw at any time without academic or financial penalty.

Consent to publish: Not Applicable. The manuscript does not contain any individual person's data in any form that could lead to their identification, including identifiable images or specific personal details. All data analyzed was aggregated and de-identified.

Data Availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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1. Introduction

Context and relevance

The cultivation of wellbeing competencies within the university context is vital in the current educational landscape (Hobbs et al., 2022; Seligman et al., 2009). This is particularly salient given that university students have experienced increasing mental health challenges in recent years, especially around and following the COVID-19 pandemic (Mortier et al., 2018; Son et al., 2020). Data from sources like the World Happiness Report (Helliwell et al., 2025) indicate a concerning trend of declining life satisfaction scores among younger populations. Since its beginnings, authors like Peterson and Seligman (2003) have advocated for the integration of Positive Psychology into educational curricula, workshops, and interventions targeting university students.

Globally, university students report substantial levels of perceived stress, frequently accompanied by anxiety and depression (Ahmed et al., 2023). The antecedents of this stress are multifaceted, encompassing academic demands, financial concerns, insufficient sleep, and geographical distance from home, among others (Beiter et al., 2015; Shankar & Park, 2016). Given the pervasive nature of stress among students, the need for preventive interventions and coping strategies within university settings is undeniable (Galante et al., 2018). Unmanaged stress can significantly impede students' wellbeing and academic progression (Pascoe et al., 2020). Therefore, equipping young adults with effective life skills for stress management in higher education is vital for their successful navigation of an increasingly complex world (Conley et al., 2017).

Theoretical foundation

A foundational pillar of wellbeing interventions and courses within the university context is character strengths (Koch et al., 2020). As defined by Peterson and Seligman (2004), the Character Strengths and Virtues (CSV) framework is an empirically informed taxonomy comprising 24 morally valued personality traits. The virtuous application of these traits is understood to foster both personal and community wellbeing (Park et al., 2004). A central premise of the CSV framework is the hierarchical relationship between virtues and character strengths; virtues—such as wisdom, courage, or justice—represent broad moral categories recognized across philosophical and cultural traditions, whereas character strengths refer to the specific, observable traits through which these virtues are expressed in daily behavior (Niemiec, 2018). The CSV classification has yielded not only a robust theoretical model, supported by extensive research and validation, but also practical applications

(McGrath et al., 2018). These include the VIA Inventory of Strengths (VIA-IS), commonly referred to as the VIA Survey, and Mindfulness-Based Strengths Practice (MBSP; Niemiec, 2014).

MBSP, developed by Niemiec (2014), is an eight-week structured intervention specifically designed to integrate two core domains within positive psychology: mindfulness and character strengths. MBSP aims to cultivate present-moment awareness, alongside the intentional application of character strengths as articulated in the CSV framework (Niemiec, 2014). Each session systematically incorporates mindfulness meditation, guided activities, theoretical input, group discussions, and an explanation of the suggested weekly practices (Niemiec, 2014). These activities are strategically designed to strengthen self-knowledge and enhance participants' ability to intentionally apply their character strengths (Niemiec, 2014). Given that mindfulness practices are typically centered on present-moment awareness, coupling them with character strengths awareness encourages participants to transition from an automatic mode of functioning to one characterized by intentional strengths awareness, appreciation, and application (Niemiec, 2014).

Given that mindfulness practices are typically centered on present-moment awareness, coupling them with character strengths awareness encourages participants to transition from an automatic mode of functioning to one characterized by intentional strengths awareness, appreciation, and application. Empirical evidence indicates that this integration yields enhanced benefits for wellbeing, meaning, stress reduction, and interpersonal relationships, fostering greater alignment between behavior and personal ideals (Ivtzan et al., 2016; Niemiec, 2018).

Current Research Landscape

Recently, research on mindfulness and positive psychology has consistently demonstrated benefits for mental health and wellbeing across diverse populations (Brown et al., 2007; Galante et al., 2018). Within this context, Mindfulness-Based Strengths Practice (MBSP) has emerged as a central development that explicitly integrates mindfulness with character strengths and now has a growing, multi-study evidence base supporting its efficacy across settings (Bretherton & Niemiec, 2020; Prasath et al., 2021).

Early evidence from adult community samples indicated that MBSP could significantly enhance flourishing, life satisfaction, engagement, and signature strengths use, while simultaneously improving overall wellbeing relative to comparison conditions (Ivtzan et al., 2016). Building on these findings, subsequent mixed-methods work with international participants has shown that MBSP is associated with improvements in wellbeing, reduced stress, and enhanced relationships, suggesting that the synergistic combination of

mindfulness and strengths application yields meaningful effects in real-world contexts (Whelan-Berry & Niemiec, 2021; Niemiec & Lissing, 2016).

MBSP-informed programs have shown benefits for adolescents and university students, such as increased wellbeing, mindfulness, perseverance, and academic-related outcomes, as well as decreases in stress and psychological inflexibility (Güldal & Satan, 2020; Wingert et al., 2020; Park, 2020). Complementing these empirical studies, a conceptual and empirical review of MBSP and related mindfulness–strengths work concluded that MBSP consistently improves wellbeing, engagement, strengths use, and various mental health indicators across a range of samples (Bretherton & Niemiec, 2020; Prasath et al., 2021). However, this emerging body of research also indicates that many MBSP studies rely on quasi-experimental or pre–post designs with modest sample sizes, underscoring the need for more rigorous methodologies and for extending research into underrepresented populations and diverse cultural contexts (Kulandaiammal et al., 2024).

Research on mindfulness interventions more broadly provides additional support for the mechanisms that MBSP aims to activate, particularly attention regulation, emotion regulation, and self-regulation processes (Brown et al., 2007; Carlson, 2013). For example, a pragmatic randomized controlled trial with university students showed that a mindfulness course increased resilience to stress and reduced distress, with effects maintained at one-year follow-up (Galante et al., 2018; Galante et al., 2021). Likewise, a brief mindfulness and compassion-based program for university students produced significant reductions in stress and improvements in wellbeing and self-compassion compared with a waitlist control (Králičková et al., 2021). Taken together, the emerging MBSP literature and the broader evidence on mindfulness interventions indicate that integrating attention regulation with strengths use is a promising route to improving wellbeing and reducing stress (Duan & Ho, 2017; Pang & Ruch, 2019b). At the same time, research on MBSP remains relatively limited in university settings and is particularly scarce in Latin American contexts, highlighting the need to examine MBSP-derived programs in these populations (Kulandaiammal et al., 2024).

In addition, although early work suggests that MBSP can be delivered flexibly, including adaptations for higher education and online formats, most published studies to date have used face-to-face group delivery and structured course formats rather than fully self-paced, on-demand modalities (Park, 2020; Wingert et al., 2020; Kennes et al., 2023). Mindfulness and Strengths in Daily Life (MSDL) was developed by the VIA Institute on Character as an on-demand course derived from the foundational principles and core practices of MBSP, with the explicit aim of offering a scalable, self-paced format. While the original MBSP is typically offered as an eight-week, live group program that combines formal mindfulness practice with strengths

exploration and application, MSDL is a self-paced, digitally delivered course with prerecorded sessions designed for individual learners seeking to integrate mindfulness and strengths into everyday life (Niemiec, 2014; VIA Institute on Character, n.d.). As in MBSP, the MSDL program preserves the core emphasis on mindful awareness and strengths use, with similar central themes and an eight-session structure, but each session is simplified to a brief theoretical video and a guided meditation of approximately 10 minutes, accompanied by reflective and practical activities that can be completed flexibly over time (Niemiec, 2014).

Building on this body of work, the present study investigates the effects of MSDL on subjective wellbeing and perceived stress in a university student sample. To date, there are no published empirical studies specifically evaluating MSDL, and this investigation therefore offers the first empirical examination of its impact in an academic context. By focusing on a fully self-paced, digitally delivered, strengths-based mindfulness program, the study addresses a critical gap in the literature on mindfulness-based strengths interventions and contributes novel evidence on the potential benefits of on-demand formats for higher education students.

Study Justification

Although MBSP has demonstrated positive effects on wellbeing and mental health and serves as the conceptual foundation for derivative programs such as MSDL, the current evidence base is still developing and presents several gaps that justify this study. First, most MBSP research has been conducted with general adult samples in the West or through heterogeneous international recruitment (Ivtzan et al., 2016; Whelan-Berry & Niemiec, 2021). The systematic review by Kulandaiammal et al. (2024) emphasizes that more studies are needed in specific populations, particularly students, and in underrepresented cultural contexts. Only a small number of studies have examined MBSP in structured educational environments, and there is limited empirical work with Latin American participants. Moreover, prior to the present study, there was no empirical research on MSDL in university settings.

Second, a further limitation in the evidence base is the relatively small sample sizes used in most published MBSP studies globally and mindfulness interventions in Spanish-speaking countries. For example, the trial by Nieto et al. (2023) included 103 participants, and the foundational study by Ivtzan et al. (2016) examined only 39 individuals. The present study, with a sample of 774 participants, addresses this methodological gap by offering a substantially larger dataset that can support more reliable conclusions about the effects of an MBSP-derived program (MSDL) in higher education settings.

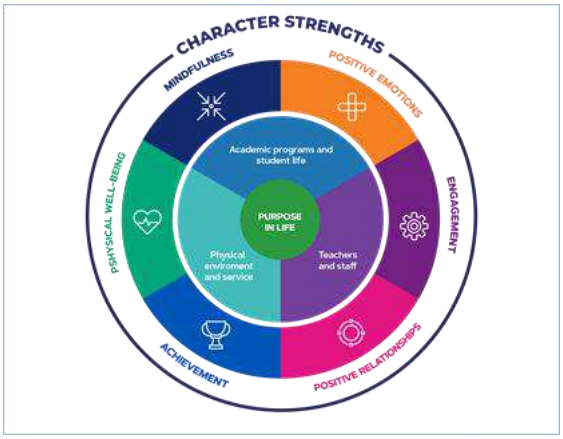
Third, universities continue to report high levels of stress and emotional exhaustion among students (Zhang et al., 2025). MBSP, and by extension its derivative program MSDL, is well suited to this context because it combines mindfulness, which may support emotion regulation and attentional control, with the cultivation of character strengths, which may foster meaning, engagement and positive relationships (Ivtzan et al., 2016; Whelan-Berry and Niemiec, 2021). The strong effects on life satisfaction and symptom reduction observed in MBSP interventions with distressed adults (Nieto et al., 2023) and the improvements in wellbeing observed in Spanish-speaking samples following mindfulness programs (Pizarro-Ruiz et al., 2021; Salcido-Cibrián et al., 2021) suggest that MBSP-based mindfulness and strengths programs, including MSDL, could be valuable tools for improving wellbeing and reducing perceived stress in university students.

Consequently, evaluating an MBSP-derived program (MSDL) specifically with university students and focusing on wellbeing and perceived stress outcomes directly addresses the critical gaps identified in the recent comprehensive review of MBSP literature (Kulandaiammal et al., 2024). This study, therefore, contributes new evidence regarding the effectiveness of MSDL, grounded in the MBSP framework, within a higher education setting and in a Latin American cultural context. Furthermore, it directly responds to the practical need for scalable, evidence-based interventions designed to support student wellbeing.

The study was conducted at Tecmilenio University, a not-for-profit institution, operates 26 campuses across Mexico, serving a total of 65,000 students. Since 2013, Tecmilenio has formally committed to the mission of forming students with a life purpose and the competencies to achieve it. The university's foundational framework is Seligman's PERMA model. Through its comprehensive Wellbeing Ecosystem (Figure 1), Tecmilenio places strong emphasis on integrating the CSV model—through the VIA Survey and the MBSP program —into classroom instruction, student activities, and organizational development, including training for faculty and staff. Consequently, CSV has become a pervasive language and a central orientation for fostering positivity within the institution, making this institution an ideal place for current research.

Figure 1.

Tecmilenio´s Wellbeing Ecosystem



Source: Tecmilenio University.

Research Questions

Specifically, this research addresses three primary questions: first, whether participation in the MSDL program, an MBSP-derived online intervention, leads to significant pre–post improvements in subjective wellbeing and psychological wellbeing among university students; second, whether participation in MSDL is associated with a significant pre–post reduction in perceived stress in this population; and third, whether these effects differ according to delivery modality (self-directed vs. accompanied) and students' prior knowledge of mindfulness and character strengths.

In line with prior evidence from MBSP and related mindfulness-based interventions, the study hypothesizes that students will show significant gains in both subjective and psychological wellbeing and significant reductions in perceived stress following participation in MSDL, with more pronounced benefits for students with lower baseline knowledge of mindfulness and character strengths and for those completing the program in the self-directed modality.

2. Methodology

Study Design

This study employed a quasi-experimental design to evaluate the impact of MSDL on subjective and psychological wellbeing and perceived stress among university students. This design was selected due to the practical constraints inherent in random assignments within an existing educational program context. While a true experimental design with random assignment would have been ideal for establishing causality, the quasi-experimental approach allowed for the examination of intervention effects within a naturalistic setting, thereby enhancing ecological validity. Given the large sample size and the implementation of robust statistical controls, this design provides a reasonable basis for inferring the program's effectiveness.

Participants

A total of 774 participants took part in the study, all of whom were enrolled at the university. The mean age of the sample was 31.44 years, with ages ranging from 16 (the youngest participant) to 61 (the oldest participant), indicating that the majority of participants were adults. Regarding gender identity, 59.3% identified as women (n = 459), 40.4% as men (n = 313), and 0.3% as non-binary (n = 2). Most participants were enrolled in graduate-level programs (n = 510, 65.9%), reflecting a predominantly adult postgraduate sample, while 264 participants (34.1%) were enrolled in undergraduate programs. Participants completed the MSDL course in one of two modalities: self-directed (n = 477, 61.6%) or accompanied (n = 297, 38.4%).

Students were eligible to participate if they voluntarily enrolled in the MSDL course. Enrollment was open to undergraduate and postgraduate students across the institution, without restrictions regarding academic major or professional background. No specific exclusion criteria were applied beyond the institutional requirement of being an enrolled student at the university, supporting the ecological validity of the study within the context of an extracurricular wellbeing program.

Participants were recruited through university communication channels managed by the academic staff team, including institutional emails, virtual learning platforms, and promotional materials describing the objectives and content of the MSDL course. Interested students registered via an online link provided by the university, and all individuals who completed the registration process were admitted until available places were filled. Participation in both the course and the associated data collection was voluntary, and students could withdraw from the course or decline to complete the questionnaires at any time without academic or financial penalty.

Procedure

Course Format and Implementation

The MSDL course, originally developed by the VIA Institute, was translated into Spanish for implementation in a higher education context, while preserving the content and sequence of the original English-language version of MSDL. Each cohort of students received the same standardized program content, ensuring that all participants were exposed to a comparable intervention experience.

The program was delivered in parallel across multiple student groups during the implementation period. Two delivery modalities were used: self-directed and accompanied. In the self-directed modality, students completed the entire course individually in a fully self-paced, self-led manner, accessing the same pre-recorded materials without real-time instructor facilitation. In the accompanied modality, a trained facilitator accompanied each section of the pre-recorded MSDL materials by projecting or sharing them on the screen during scheduled real-time virtual sessions and briefly facilitating group reflections and explaining transitions between activities, while adhering closely to the structure and timing of the original on-demand program.

Session Structure and Duration

The course consisted of eight structured sessions delivered over eight consecutive weeks, with one session per week. Each session combined three core components: a brief theoretical video (approximately 10 minutes), an audio-guided meditation (approximately 10 minutes), and a reflective exercise or activity that focused on the session theme. In practice, it was estimated that students could complete each weekly session, including viewing the video, engaging in the meditation, and completing the reflective task, within approximately 30–60 minutes, with some variability depending on individual pacing and level of engagement.

Logistics

Facilitators who accompanied the groups were university teachers and professors who had completed preparatory training specifically focused on the MBSP-based course content, the use of the on-demand MSDL materials, and basic facilitation skills for mindfulness and strengths discussions. To support fidelity to the intervention model, facilitators followed the standardized pre-recorded videos and audios of the MSDL course, which were integrated into a university online learning platform and were instructed not to modify the core structure, sequence, or main exercises of each session. Facilitators primarily served to coordinate session logistics, hold the learning environment, and guide brief debriefings, thereby maintaining the integrity of the original program while adapting it to the higher education context.

Students were invited to engage in weekly home practice between sessions, including completing the reflective activities in more depth, repeating the guided meditations, and applying mindfulness and strengths exercises in daily life, following the suggestions provided in the course materials. These home practices were strongly encouraged but not mandatory, and no formal credit or grades were assigned based on adherence, which is consistent with the extracurricular and voluntary nature of the program.

Ethical Approval

This study was reviewed and approved by the Postgraduate Directorate of the Academic Vice-Rectorate internal ethics oversight body at Universidad Tecmilenio (led by Dr. Maria Eugenia Castillo Torres), in collaboration with the Social Impact Area and the Content Design Department of the Institute of Purpose and Integral Wellbeing. The study was conducted in strict accordance with the Code of Ethics for Psychologists issued by the National Federation of Psychologists of Mexico (2018). Given the classification of this activity as a minimal-risk educational assessment utilizing aggregated and de-identified data, formal review by an external Institutional Review Board (IRB) was not required. All data were handled confidentially, and participation was entirely voluntary, allowing students to withdraw at any time without academic or financial penalty.

Consent to Participate

Informed consent was obtained from all participants prior to participation in the study. Although no formal written informed consent, specific to a research protocol, was obtained because the data collection was embedded in program evaluation, all students were explicitly informed that their responses would be used in de-identified and aggregated form to assess the impact of the course on wellbeing-related outcomes. Participation was entirely voluntary, and students could withdraw from the course or decline to complete questionnaires at any time without academic or financial penalty.

Assessment timeline and data collection

All measures were administered at two time points, pre-intervention and post-intervention, using the online survey platform Qualtrics (2025) provided by the university. The pre-test questionnaire was completed by students via an online link shared immediately before engaging with the content of Session 1. The post-test questionnaire was administered immediately after Session 8, on the same day and directly following the completion of the final session activities, again through the same online survey system.

At both pre-test and post-test, the survey included all study instruments: the PERMA-Profiler (Butler & Kern, 2016), the Satisfaction With Life Scale (SWLS; Diener et al., 1985), the Mindful Attention and

Awareness Scale (MAAS; Brown & Ryan, 2003), the Perceived Stress Scale (PSS; Cohen et al., 1983), and the Strengths Use Scale (SUS; Govindji & Linley, 2007). Students were instructed to complete the survey individually and honestly, in a quiet setting, and to respond to all items to the best of their ability. The same Spanish-language versions of all scales were used at both time points (Hölzel et al., 2015; Martín-Díaz & Fernández-Abascal, 2024; Padrós-Blázquez et al., 2015; Ramírez & Hernández, 2007; Salazar-Estrada et al., 2019).

Measures

PERMA-Profiler. Psychological wellbeing across multiple domains was assessed using the PERMA-Profiler, a 23-item self-report measure designed to evaluate Seligman's five pillars of wellbeing—positive emotion, engagement, relationships, meaning, and accomplishment—along with additional items assessing negative emotion, physical health, and overall happiness (Butler & Kern, 2016). Each item is scored on an 11-point Likert-type scale, ranging from 0 (e.g., "never" or "not at all") to 10 (e.g., "always" or "completely"), and domain scores are calculated by averaging the relevant items, with higher scores indicating greater perceived wellbeing in each domain (Butler & Kern, 2016). For this study, the Spanish adaptation of the PERMA-Profiler was used, which has demonstrated adequate internal consistency and construct validity in Spanish-speaking populations, including evidence that the factor structure of the original version is transferable to Spanish contexts (Martín-Díaz & Fernández-Abascal, 2024; Paniagua-Granados et al., 2023).

The PERMA-Profiler was selected because it provides a multidimensional assessment of wellbeing that aligns conceptually with the aims of MBSP-based interventions, which target not only reductions in distress but also increases in positive functioning and engagement with life (Butler & Kern, 2016; Niemiec, 2014; Seligman, 2011). In addition to examining individual PERMA domains, an overall wellbeing score can be computed by averaging the core PERMA items, allowing researchers to capture a general index of wellbeing alongside domain-specific profiles (Butler & Kern, 2016). In this study, analyses focused on an overall PERMA-based wellbeing index, computed by averaging the core PERMA items, to provide a parsimonious indicator of global wellbeing change associated with participation in the Mindfulness and Strengths in Daily Life (MSDL) course (Butler & Kern, 2016; Martín-Díaz & Fernández-Abascal, 2024).

Satisfaction With Life Scale (SWLS). Global cognitive evaluations of life satisfaction were measured using the Satisfaction With Life Scale (SWLS), a widely used 5-item instrument that assesses individuals' overall judgment of their life as a whole (Diener et al., 1985). Each item is rated on a 7-point Likert-type scale

ranging from 1 (“strongly disagree”) to 7 (“strongly agree”), and a total score is obtained by summing item responses, with higher scores reflecting greater overall life satisfaction. The SWLS was chosen because it offers a brief yet psychometrically robust index of life satisfaction that has been validated across numerous cultures and populations, making it suitable for higher education settings (Diener et al., 1985; Pavot & Diener, 1993).

For the present study, a Spanish version of the SWLS previously validated in Mexican samples was used, drawing on evidence for its reliability and validity in both general population and occupational groups in Mexico (Padrós-Blázquez et al., 2015; Salazar-Estrada et al., 2019). Prior studies in Mexican contexts have reported satisfactory internal consistency and a unidimensional factor structure, supporting the use of the SWLS as a brief measure of global life satisfaction among Spanish-speaking respondents (Padrós-Blázquez et al., 2015; Salazar-Estrada et al., 2019). Using the SWLS alongside the PERMA-Profiler allowed the study to capture both multidimensional and global aspects of wellbeing in relation to participation in the MBSP-based course (Butler & Kern, 2016; Diener et al., 1985; Padrós-Blázquez et al., 2015).

Mindful Attention and Awareness Scale (MAAS). Dispositional mindfulness was assessed using the Mindful Attention and Awareness Scale (MAAS), a 15-item self-report measure that evaluates the tendency to attend to and be aware of present-moment experiences in daily life (Brown & Ryan, 2003). Items focus primarily on the frequency of experiences of absent-mindedness or automatic pilot, which are reverse-coded so that higher scores represent greater mindful attention and awareness (Brown & Ryan, 2003). Responses are provided on a Likert-type scale (from 1 to 6), and a single total score is computed by averaging item responses, reflecting a unidimensional construct of dispositional mindfulness (Brown & Ryan, 2003).

The MAAS was selected because it has been extensively used in research on mindfulness-based interventions and has demonstrated good psychometric properties in diverse populations, making it an appropriate indicator of mindfulness-related changes in higher education settings (Brown & Ryan, 2003; Baer et al., 2006). In this study, the Mexican Spanish version of the MAAS was used, which has shown adequate internal consistency and factorial validity, supporting its use as a measure of mindfulness in Spanish-speaking university populations (Hölzel et al., 2015). Employing the Spanish MAAS allowed for a culturally and linguistically appropriate assessment of changes in mindful attention and awareness associated with participation in the MBSP-based program (Brown & Ryan, 2003; Hölzel et al., 2015).

Perceived Stress Scale (PSS-14). Perceived stress was measured using the 14-item version of the Perceived Stress Scale (PSS-14), which assesses the extent to which individuals perceive their lives as

unpredictable, uncontrollable, and overloaded during the past month (Cohen et al., 1983). Items capture general feelings of stress and the degree to which respondents appraise their situations as stressful, with responses rated on a 5-point Likert-type scale ranging from “never” to “very often,” and a total score obtained by summing item responses after appropriate reverse scoring. Higher scores indicate higher perceived stress and have been linked to a wide range of psychological and health outcomes, making the PSS a widely used instrument in stress and health research.

The Spanish-language version of the PSS-14 used in this study was based on an adaptation validated in Mexican samples, which has shown an interpretable factor structure and adequate psychometric properties in Spanish-speaking populations (Ramírez & Hernández, 2007). Using the PSS-14 allowed the study to examine whether participation in the MSDL course was associated with reductions in perceived stress, in line with evidence that mindfulness-based and strengths-based interventions can buffer stress and enhance coping resources (Cohen et al., 1983; Ramírez & Hernández, 2007; Brown & Ryan, 2003; Niemiec, 2014).

Strengths Use Scale (SUS). The extent to which participants reported actively using their personal strengths in daily life was assessed using the Strengths Use Scale (SUS; Govindji & Linley, 2007). The SUS is a self-report measure developed to quantify how frequently and intentionally individuals apply their character strengths across different life domains. Items are rated on a 7-point Likert-type scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”), and a total strengths-use score is obtained by summing or averaging item responses, with higher scores indicating more frequent strengths use. Prior research has shown that strengths use is positively associated with wellbeing and self-concordant goal pursuit, supporting its relevance as an outcome in interventions that encourage the identification and enactment of character strengths (Govindji & Linley, 2007).

The SUS was included in this study because the MBSP-based course explicitly targets both awareness and application of character strengths, making strengths use a theoretically central outcome for evaluating the intervention’s impact (Niemiec, 2014; Govindji & Linley, 2007). A Spanish-language version of the SUS was used to ensure linguistic accessibility for participants, with translation procedures aligned with common guidelines for adapting psychological instruments; however further psychometric work in Spanish-speaking contexts remains warranted. Including the SUS alongside wellbeing, life satisfaction, mindfulness, and stress measures allowed for a more comprehensive examination of how strengths use may accompany changes in

subjective wellbeing among students participating in the course (Govindji & Linley, 2007; Butler & Kern, 2016; Diener et al., 1985; Brown & Ryan, 2003).

Groups and Absence of Control Condition

All participants who completed the questionnaires were enrolled in the MSDL course, and no separate control group was established, reflecting the naturalistic implementation of an extracurricular wellbeing program rather than a controlled experimental design. Although, in principle, a waiting-list control group or a non-intervention comparison group with a similar student profile could have been recruited, the initiative was not originally planned as a controlled trial, and the institutional priority was to offer the course to all interested students. For descriptive purposes, participants can be categorized according to their academic level (postgraduate vs. undergraduate), which may be considered in subsequent analyses or subgroup descriptions, even though all participants received the same MSDL intervention.

Statistical Analyses

All statistical analyses were conducted using JASP, Jeffrey's Amazing Statistics Program (version 0.95.3, 2025). Descriptive statistics were calculated for all demographic variables and outcome measures. To assess the overall impact of the MSDL program, paired-samples t-tests were performed to compare mean scores for subjective wellbeing (SWLS), psychological wellbeing (PERMA), perceived stress (PSS), strengths use (SUS), and mindfulness (MAAS) from pre-intervention (baseline) to post-intervention.

Effect sizes for these primary pre-post comparisons were calculated using Cohen’s d to quantify the magnitude of observed changes, interpreting values according to established guidelines (e.g., d=0.20 for small, d=0.50 for medium, d=0.80 for large effects) (Cohen, 2013). To explore potential differential effects across various subgroups (e.g., by sex, program modality, or baseline mindfulness/character-strengths knowledge levels), independent-samples t-tests were employed to compare pre–post change scores between these subgroups. This approach allowed for a direct comparison of the intervention's impact across different participant characteristics. The level of statistical significance was set at $p < .05$ for all inferential analyses (Fisher, 1925).

3. Results

This section reports the empirical findings derived from the implementation of Mindfulness and Strengths in Daily Life (MSDL). Analyses primarily utilized paired-samples t-tests to assess pre- and post-intervention changes across key dependent variables: mindfulness state, character strengths use, subjective wellbeing, PERMA-based wellbeing, and perceived stress. Following this, the intervention's effects were further explored within specific subgroups, differentiated by participant sex, program delivery modality, and prior knowledge levels in mindfulness and character strengths. The interpretation of effect size magnitudes throughout this section adheres to Cohen's d conventions.

As MSDL is designed to directly enhance mindfulness and the intentional application of character strengths, these two core process variables are presented first, followed by the broader wellbeing and stress outcomes that the intervention is intended to influence.

Global Effects of the MSDL Intervention

Paired-samples t-test results for the full sample (N = 774) indicated statistically significant improvements across all evaluated variables from pre- to post-intervention (see Table 1). A significant increase was observed in participants' mindfulness state, $t(773) = -10.89$, $p < .001$. The mean score on the MAAS rose from $M = 4.02$ ($SD = 1.00$) at pre-intervention to $M = 4.41$ ($SD = 1.03$) at post-intervention. This change corresponds to a moderate effect size ($d = -0.39$, $SE = 0.04$). The self-reported use of character strengths, as measured by the SUS, also significantly improved, $t(773) = -7.42$, $p < .001$. Mean scores increased from $M = 5.52$ ($SD = 1.25$) at pre-intervention to $M = 5.86$ ($SD = 1.101$) at post-intervention. This effect had a small to moderate magnitude ($d = -0.27$, $SE = 0.04$).

Table 1.

Global Effects of the MSDL Intervention

Instrument	Application	N	M	SD	t	df	p	Cohen's d
SWLS	pre	774	5.40	1.14	-7.88	767	< .001*	-0.28
	post	768	5.72	1.10				
PERMA	pre	774	7.45	0.94	-17.95	773	< .001*	-0.65
	post	774	8.00	0.86				
MAAS	pre	774	4.02	1.00	-10.89	773	< .001*	-0.39
	post	774	4.41	1.03				
PSS	pre	774	2.22	0.70	27.79	773	< .001*	1.00
	post	774	1.62	0.55				
SUS	pre	774	5.52	1.25	-7.42	773	< .001*	-0.27
	post	774	5.86	1.10				

Note: Mean scores, standard deviations (SD), t-statistics, degrees of freedom (df), p-values, and Cohen's d effect sizes for paired-samples t-tests comparing pre-intervention to post-intervention values. Cohen's d values are interpreted as small (0.2), medium (0.5), and large (0.8). All statistical significance was set at $p < .05$ (*).

Subjective wellbeing, assessed using the SWLS, exhibited a statistically significant increase, $t(767) = -7.88$, $p < .001$. Mean scores rose from $M = 5.40$ ($SD = 1.14$) at pre-intervention to $M = 5.72$ ($SD = 1.10$) at post-intervention, corresponding to a small to moderate effect size ($d = -0.29$, $SE = 0.04$). Concurrently, psychological wellbeing, as measured by the PERMA Profiler, demonstrated a significant and substantial improvement, $t(773) = -17.95$, $p < .001$. The mean score increased from $M = 7.45$ ($SD = 0.94$) at pre-intervention to $M = 8.00$ ($SD = 0.86$) at post-intervention. This change yielded a moderate to large effect size ($d = -0.65$, $SE = 0.04$), notably greater in magnitude than that observed for subjective wellbeing.

Complementing the improvements in wellbeing and mindfulness, perceived stress, as measured by the Perceived Stress Scale (PSS), significantly decreased, $t(773) = 27.79$, $p < .001$. The mean score dropped from $M = 2.22$ ($SD = 0.70$) at pre-intervention to $M = 1.62$ ($SD = 0.55$) at post-intervention. This reduction was associated with a very large effect size ($d = 1.00$, $SE = 0.04$).

Subgroup Analyses

Impact of MSDL by Gender

Analyses stratified by gender revealed significant improvements across all variables for both men ($n = 313$) and women ($n = 460$) (Table 2).

Table 2.

t-test for subgroup analyses by Gender

			Men						*Women*						
Instrument	Application	N	M	SD	t	df	p	Cohen's d	M	SD	SE	t	df	p	Cohen's d
SWLS	Pre	313	5.42	1.16	-4.4	309	< .001*	-0.25	5.39	1.11	0.05	-6.59	455	< .001*	-0.31
	Post	310	5.70	1.09					5.75	1.08	0.05				
PERMA	Pre	313	7.49	0.94	-11	312	< .001*	-0.61	7.43	0.93	0.04	-14.51	458	< .001*	-0.68
	Post	313	8.02	0.88					8.00	0.82	0.04				
MAAS	Pre	313	4.17	0.92	-4.9	312	< .001*	-0.28	3.91	1.04	0.05	-10.03	458	< .001*	-0.47
	Post	313	4.44	0.97					4.40	1.06	0.05				
PSS	Pre	313	2.14	0.73	16.8	312	< .001*	0.95	2.26	0.67	0.03	22.20	458	< .001*	1.04
	Post	313	1.60	0.52					1.63	0.56	0.03				
SUS	Pre	313	5.57	1.19	-3.2	312	0.002*	-0.18	5.50	1.26	0.06	-6.86	458	< .001*	-0.32
	Post	313	5.78	1.07					5.93	1.10	0.05				

Notes: Mean scores, standard deviations (SD), t-statistics, degrees of freedom (df), p-values, and Cohen's d effect sizes for paired-samples t-tests comparing pre-intervention to post-intervention values. Cohen's d values are interpreted as small (0.2), medium (0.5), and large (0.8). All statistical significance was set at p < .05."

A significant increase in MAAS scores was observed for both genders. Men's improvement corresponded to an effect size of d = -0.28 (t(312) = -4.94, p < .001), whereas women showed a larger effect size of d = -0.47 (t(458) = -10.03, p < .001). The SUS also showed a significant improvement for both genders. Men showed an effect size of d = -0.18 (t(312) = -3.15, p = .002), while women demonstrated a larger effect size of d = -0.32 (t(458) = -6.86, p < .001).

Regarding SWLS, men experienced a significant increase, t(309) = -4.41, p < .001, resulting in a small to moderate effect size (d = -0.25). Women likewise showed a significant improvement, t(455) = -6.59, p < .001, also reflecting a small to moderate effect size (d = -0.31). For PERMA, both men and women showed significant improvements. Men demonstrated an effect size of d = -0.61 (t(312) = -10.73, p < .001), whereas women exhibited a larger effect size of d = -0.68 (t(458) = -14.51, p < .001).

PSS significantly decreased for both men and women. Men experienced a large reduction with an effect size of d = 0.95 (t(312) = 16.81, p < .001). Women also showed a large reduction, with an effect size of d = 1.04 (t(458) = 22.20, p < .001), which was slightly larger than that observed for men.

Impact of MSDL By Program Modality (Self-directed vs. Accompanied)

Both program modalities, Self-directed (*n*= 476) and Accompanied (*n*=290) yielded statistically significant improvements across all variables (Table 3).

Table 3.
t-test for subgroup analyses by program modality

			Self-directed						Accompanied					
Instrument	Measure	N	M	SD	t	df	p	Cohen's d	M	SD	t	df	p	Cohen's d
SWLS	Pre	476	5.38	1.17	-7.12	474	< .001*	-0.33	5.44	1.06	-3.84	290	< .001*	-0.23
	Post	475	5.73	1.10					5.72	1.07				
PERMA	Pre	476	7.45	0.96	-14.85	475	< .001*	-0.68	7.46	0.88	-10.26	295	< .001*	-0.60
	Post	476	8.03	0.82					7.98	0.88				
MAAS	Pre	476	4.01	0.99	-10.07	475	< .001*	-0.46	4.03	1.02	-5.01	295	< .001*	-0.29
	Post	476	4.46	1.00					4.33	1.05				
PSS	Pre	476	2.24	0.71	22.98	475	< .001*	1.05	2.17	0.68	15.88	295	< .001*	0.92
	Post	476	1.59	0.53					1.66	0.56				
SU	Pre	476	5.53	1.23	-6.97	475	< .001*	-0.32	5.53	1.23	-3.29	295	0.001*	-0.19
	Post	476	5.91	1.02					5.80	1.19				

Notes: Mean scores, standard deviations (SD), t-statistics, degrees of freedom (df), p-values, and Cohen's d effect sizes for paired-samples t-tests comparing pre-intervention to post-intervention values. Cohen's d values are interpreted as small (0.2), medium (0.5), and large (0.8). All statistical significance was set at p < .05 (*).

Regarding MAAS, both groups demonstrated significant pre-post improvements. The self-directed group exhibited an effect size of d = -0.46, which was larger than that of the accompanied group (d = -0.29). Similarly, SUS significantly improved in both modalities. The self-directed group showed an effect size of d = -0.32, which exceeded that of the accompanied group (d = -0.19).

Improvements in SWLS were significant for both modalities, with the self-directed group showing d = -0.33 and the accompanied group d = -0.23. For PERMA, the self-directed group (d = -0.68) showed a larger effect size than the accompanied group (d = -0.60). Finally, the reduction in PSS was significant in both groups. The self-directed group had an effect size of d = 1.05, which was greater than the accompanied group's d = 0.92.

Impact of MSDL by Prior Mindfulness Knowledge Level

Participants were categorized into two groups based on their self-reported prior mindfulness knowledge: "Minimum or null prior knowledge" (n = 553) and "High level of knowledge" (n = 218). Both groups demonstrated significant pre-post improvements following the MSDL intervention (Table 4).

Table 4.

t-test for subgroup analyses by program modality

			Minimum/Null knowledge of Mindfulness						*High level of knowledge of Mindfulness*					
Instrument	Measure	N	M	SD	t	df	p	Cohen's d	M	SD	t	df	p	Cohen's d
SWLS	Pre	553	5.37	1.09	-7.49	548	< .001*	-0.32	5.51	1.22	-3.09	216	0.002*	-0.21
	Post	549	5.71	1.07					5.78	1.11				
PERMA	Pre	553	7.32	0.91	-17.49	552	< .001*	-0.74	7.79	0.89	-6.37	218	< .001*	-0.43
	Post	553	7.95	0.81					8.17	0.90				
MAAS	Pre	553	3.93	0.99	-11.23	552	< .001*	-0.48	4.24	0.99	-2.96	218	0.003*	-0.20
	Post	553	4.40	1.02					4.45	1.03				
PSS	Pre	553	2.24	0.71	25.82	552	< .001*	1.10	2.14	0.66	11.65	218	< .001*	0.79
	Post	553	1.59	0.53					1.70	0.56				
SUS	Pre	553	5.41	1.22	-7.25	552	< .001*	-0.31	5.84	1.21	-2.10	218	0.037*	-0.14
	Post	553	5.82	1.11					5.99	1.01				

Notes: Mean scores, standard deviations (SD), t-statistics, degrees of freedom (df), p-values, and Cohen's d effect sizes for paired-samples t-tests comparing pre-intervention to post-intervention values. Cohen's d values are interpreted as small (0.2), medium (0.5), and large (0.8). All statistical significance was set at p < .05 (*).

In terms of MAAS, the group with minimum or null prior knowledge (d = -0.48) exhibited a larger effect size for improvement compared to the group with high prior knowledge (d = -0.20). **SUS** also showed significant improvements for both groups, with effect sizes of d = -0.31 for the minimum/null knowledge group and d = -0.14 for the high knowledge group.

Improvements in SWLS were also significant for both groups. The minimum/null prior knowledge group showed an effect size of d = -0.25, while the high prior knowledge group showed d = -0.31. Regarding PERMA, significant improvements were observed in both groups, with the minimum/null prior knowledge group yielding an effect size of d = -0.74, which was larger compared to the high knowledge group (d = -0.43). Finally, the reduction in PSS was significant in both groups. The minimum/null prior knowledge group demonstrated an effect size of d = 1.10, which was larger than that of the high knowledge group (d = 0.79).

***Impact of MSDL by* Prior Character Strengths Knowledge Level**

For this analysis, participants were categorized into "Minimum or null prior knowledge of Character Strengths" (n = 483) and "High prior knowledge of Character Strengths" (n = 286). Both groups demonstrated significant pre-post improvements across all variables (Table 5).

Table 5.

t-test for subgroup analyses by Prior Mindfulness Knowledge Level

			Minimum/Null prior knowledge of Character Strengths						*High prior knowledge of Character Strengths*					
Instrument	Measure	N	M	SD	t	df	p	Cohen's d	M	SD	t	df	p	Cohen's d
SWLS	Pre	483	5.36	1.08	-6.77	478	< .001	-0.31	5.47	1.20	-4.20	286	< .001	-0.25
	Post	479	5.70	1.08					5.78	1.09				
PERMA	Pre	483	7.31	0.91	-16.44	482	< .001	-0.75	7.70	0.91	-8.38	288	< .001	-0.49
	Post	483	7.94	0.84					8.13	0.83				
MAAS	Pre	483	3.92	0.99	-11.33	482	< .001	-0.52	4.18	1.01	-3.61	288	< .001	-0.21
	Post	483	4.42	1.02					4.41	1.02				
PSS	Pre	483	2.26	0.71	23.94	482	< .001	1.09	2.14	0.68	14.77	288	< .001	0.87
	Post	483	1.59	0.54					1.66	0.55				
SUS	Pre	483	5.34	1.25	-7.94	482	< .001	-0.36	5.86	1.13	-1.71	288	0.09	-0.10
	Post	483	5.80	1.09					5.99	1.01				

Notes: Mean scores, standard deviations (SD), t-statistics, degrees of freedom (df), p-values, and Cohen's d effect sizes for paired-samples t-tests comparing pre-intervention to post-intervention values. Cohen's d values are interpreted as small (0.2), medium (0.5), and large (0.8). All statistical significance was set at $p < .05$ (*).

In MAAS, both groups showed significant improvements, but the group with minimum or null prior knowledge of strengths (d = -0.52) exhibited a larger effect size than the high knowledge group (d = -0.21). SUS also significantly improved for both groups, with the minimum/null prior knowledge group showing an effect size of d = -0.36, which was greater than that of the high knowledge group (d = -0.10).

Improvements in SWLS were significant for both groups. The minimum/null prior knowledge group showed an effect size of d = -0.25, while the high prior knowledge group showed d = -0.31. Regarding PERMA, both groups showed significant improvements. The minimum/null prior knowledge group exhibited an effect size of d = -0.75, which was larger than that of the high knowledge group (d = -0.49). Finally, the reduction in PSS was significant in both groups. The minimum/null prior knowledge group demonstrated an effect size of d = 1.09, which was larger than that of the high knowledge group (d = 0.87).

4. Discussion

Summary of Key Findings

This study explored the impact of the MSDL on various aspects of wellbeing and stress among university students. The findings consistently demonstrate the significant effectiveness of the MSDL intervention across all measured outcomes in the global sample. Specifically, participants exhibited robust improvements in their mindfulness state, as measured by the MAAS, and increased character strength use, quantified by the SUS. These direct program outcomes were accompanied by enhanced wellbeing, reflected in significant increases in both subjective wellbeing (SWLS) and psychological wellbeing (PERMA), as well as a substantial reduction in perceived stress (PSS).

Beyond these overall positive effects, subgroup analyses revealed important nuances regarding the intervention's impact. While the MSDL proved beneficial for all examined subgroups—stratified by gender, program delivery modality, and prior knowledge levels of mindfulness and character strengths—variations in effect magnitudes were observed. Notably, the self-directed modality tended to yield slightly larger improvements across most variables compared to the accompanied modality. Furthermore, participants with minimal or no prior knowledge of either mindfulness or character strengths generally experienced more pronounced benefits, particularly in their mindfulness state, character strength use, psychological wellbeing, and stress reduction. These findings collectively address our primary research questions, indicating that the MSDL program significantly enhances wellbeing and reduces perceived stress in university students.

Comparison with Prior Literature

The present research, which demonstrate robust improvements in mindfulness state, character strength use, subjective and psychological wellbeing, and a significant reduction in perceived stress following MSDL, are largely consistent with the growing body of literature on mindfulness-based and strengths-based interventions. Specifically, the observed enhancements in global wellbeing and strengths use align with previous randomized controlled trials and mixed-methods studies that have reported similar positive outcomes for MBSP in adult community samples (Ivtzan et al., 2016; Whelan-Berry & Niemiec, 2021). The significant decrease in perceived stress and the improvements in various wellbeing indicators observed in our university student population further corroborate findings from interventions using strengths-focused mindfulness for individuals experiencing elevated symptoms (Nieto et al., 2023) and general adult populations (Kulandaiammal et al., 2024).

This study extends the current literature by providing evidence of MSDL's effectiveness within a large-scale university context, a population often characterized by unique stressors and developmental challenges, and one that has been underrepresented in previous MBSP research. While prior mindfulness interventions in Spanish-speaking regions have shown positive results in reducing anxiety and depression (Salcido-Cibrián et al., 2021) and improving life satisfaction (Pizarro-Ruiz et al., 2021), the current research is the first to apply and rigorously evaluate a full MSDL protocol in a Latin American university setting. This geographical and cultural context represents a crucial expansion of the generalizability of MSDL's benefits, addressing a significant gap highlighted by recent systematic reviews.

Furthermore, subgroup analyses reveal new insights regarding the differential impact of MSDL. The finding that participants with lower prior knowledge of mindfulness or character strengths experienced more pronounced benefits suggests that MSDL may be particularly effective as an introductory intervention for those less familiar with these practices. This observation aligns with pedagogical principles where foundational learning often yields the most significant initial gains and provides a valuable direction for targeted intervention strategies. The tendency for the self-directed modality to show slightly larger effect sizes across several variables, compared to the accompanied modality, offers initial indications regarding optimal delivery formats, although this finding warrants further investigation to understand underlying mechanisms.

Interpretation

The observed robust improvements across all wellbeing indicators (subjective, psychological) and the substantial reduction in perceived stress strongly support the theoretical groundwork of the MBSP. The program's integrated approach, combining mindfulness with character strengths, appears to engage multiple pathways to flourishing. Mindfulness training likely contributes to enhanced wellbeing by fostering present-moment awareness, reducing rumination, and improving emotion regulation and attentional control (Ivtzan et al., 2016). These cognitive and emotional skills, in turn, can help individuals to better appraise and cope with stressors, directly contributing to the observed decrease in perceived stress.

Concurrently, the intentional cultivation and application of character strengths offer distinct, yet complementary, benefits. By guiding participants to identify and purposefully use their signature strengths, MBSP empowers them to act in ways that are congruent with their authentic selves, fostering a deeper sense of meaning, engagement, and positive relationships—key components of the PERMA model (Niemiec, 2018). This strength-based perspective shifts focus from deficits to resources, enhancing self-efficacy and resilience, which

are critical assets for navigating the demands of university life. The synergistic interaction between mindfulness, which helps individuals become aware of their inner resources, and character strengths, which provide tools for positive action, likely explains the comprehensive improvements across both wellbeing dimensions and stress reduction.

The differential effects observed in our subgroup analyses further illuminate these mechanisms. The more pronounced benefits among participants with minimal prior knowledge of mindfulness or character strengths suggest that the MSDL effectively establishes foundational skills and awareness in these individuals. For those new to these concepts, the structured introduction to present-moment awareness and the identification of personal strengths may represent a significant departure from habitual cognitive and behavioral patterns, leading to larger initial gains. This implies a dose-response or a 'ceiling effect' where individuals with existing high levels of these traits might still benefit, but their room for improvement is naturally smaller.

Similarly, the slightly stronger outcomes in the self-directed modality, compared to the accompanied format, could be attributed to several contextual factors. Self-directed learning often requires a higher degree of intrinsic motivation and personal responsibility, which may translate into deeper engagement with the MSDL practices. Alternatively, the self-directed group might have benefited from a more flexible pace or personalized integration of practices into daily life, fostering a greater sense of autonomy and ownership over their wellbeing journey. These distinctions highlight the importance of considering individual readiness and learning preferences in program design and delivery.

Moderators and Mediators

The observed patterns of change and differential outcomes within our study offer valuable insights into potential mediating and moderating mechanisms of MBSP-based interventions.

Conceptually, the core components of the MBSP and MSDL—mindfulness skills and character strengths use—are suggested as primary mediators through which the program exerts its positive effects. The significant improvements in participants' mindfulness state (MAAS) and increased character strength use (SUS) observed in our global sample suggest that these elements are indeed responsive to the intervention. It is plausible that enhanced mindfulness, fostering greater present-moment awareness and improved emotion regulation, facilitates a more deliberate and effective application of character strengths. Concurrently, actively leveraging one's strengths might reinforce mindful awareness and contribute to a deeper sense of engagement and meaning. This synergistic interplay between mindfulness and strengths is likely the underlying mechanism

driving the observed improvements in subjective and psychological wellbeing and the reduction in perceived stress. Future research employing longitudinal designs and advanced statistical mediation analyses could empirically validate these hypothesized pathways.

Furthermore, our subgroup analyses strongly indicate the presence of significant moderators influencing the MSDL's effectiveness. The most salient moderating factors appear to be participants' prior knowledge levels in both mindfulness and character strengths. Consistently, individuals with minimal or no prior exposure to these concepts demonstrated larger effect sizes across several outcome variables compared to their more experienced counterparts. This suggests that the MSDL may function particularly effectively as a foundational intervention, offering more substantial initial gains for those new to mindfulness practices and the intentional application of strengths.

Additionally, the program's delivery modality emerged as another potential moderator. While both self-directed and accompanied formats were effective, the self-directed modality consistently yielded slightly larger effect sizes. This could imply that characteristics inherent to self-directed learning, such as increased autonomy, self-pacing, or heightened intrinsic motivation, may optimize engagement with and absorption of the intervention content, thereby enhancing its impact. These moderating insights are crucial for tailoring MSDL delivery and targeting specific populations where the intervention might yield the greatest benefits.

Limitations

Despite the significant and promising findings, this study is subject to several limitations that warrant consideration. First, although the quasi-experimental design allowed for evaluation in a real-world setting with a large sample, the absence of a randomly assigned control group limits the ability to draw definitive causal inferences. Future research should employ randomized controlled trials or more rigorous quasi-experimental designs with matched comparison groups.

Second, the reliance on self-report measures introduces the potential for response biases, including social desirability effects. Participants’ subjective reports of wellbeing, stress, and mindfulness may have been influenced by their awareness of the intervention’s aims. Incorporating objective indicators or multi-method assessment approaches in future studies could strengthen the validity of findings.

Third, the lack of continuous monitoring of individual engagement with MSDL practices (e.g., adherence to home practice) limited the ability to examine dose–response relationships. Future research would

benefit from collecting detailed process-level data to better understand how engagement patterns influence outcomes.

Fourth, although the large sample drawn from a Latin American university contributes to addressing gaps in the current literature, the conclusions of this study are specific to university students, the majority of whom were young adults and adults enrolled in undergraduate and postgraduate programs. As such, the generalizability of these findings to non-university populations or to individuals in different life stages or educational contexts remains uncertain and warrants further investigation.

Finally, the study focused exclusively on immediate post-intervention outcomes. The long-term sustainability of the observed improvements was not assessed, underscoring the need for longitudinal follow-up studies to evaluate the durability of effects and to identify optimal strategies for maintaining gains over time.

Practical Implications

The present findings indicate that MSDL, an MBSP-derived, fully self-paced digital program, can be feasibly implemented at scale in university settings while yielding meaningful gains in mindfulness, strengths use, wellbeing, and perceived stress reduction. Universities can integrate MSDL as an extracurricular or co-curricular offering hosted on institutional learning platforms, allowing students to access brief prerecorded sessions and guided practices at their own pace alongside academic demands. Given that the self-directed modality showed slightly stronger effects and students with little prior exposure to mindfulness or character strengths benefited the most, institutions may prioritize offering MSDL as an introductory wellbeing resource for first-year students or those identified as experiencing high stress or low familiarity with these practices.

For educators, incorporating elements of MBSP and MSDL into courses—such as short mindfulness practices, strengths identification activities, and structured reflection prompts—can enrich curricula without requiring full program delivery in class time. Faculty and student support services can also encourage students to complete the MSDL sessions in parallel with demanding academic periods, framing the program as a skills-based tool to support attention regulation, emotion regulation, and strengths-based coping. At an institutional level, universities can embed MSDL within broader mental health and wellbeing strategies, using centralized communication campaigns, incentives for completion, and integration with counseling or coaching services to increase engagement and normalize strengths-based mindfulness as part of campus culture.

Future Research Directions

Future research should more explicitly compare MSDL with the full, group-based MBSP protocol to clarify whether similar or distinct patterns of change emerge across subjective wellbeing, psychological wellbeing, stress, and academic-related outcomes. Randomized controlled trials that contrast self-paced digital delivery with accompanied or in-person group formats would help identify which modalities are most effective for different student subgroups (e.g., by baseline distress, prior mindfulness experience, or learning preferences), and could directly test whether a complete live MBSP program yields differential benefits compared to a self-directed MSDL course. In addition, studies in diverse higher-education contexts—including technical institutes, community colleges, and non-Latin-American regions—are needed to test the generalizability and to explore potential cultural moderators.

There is also scope to broaden the range of outcomes and methods used to evaluate MSDL and related mindfulness-based strengths programs. Future work could incorporate academic indicators (e.g., academic engagement, dropout intentions), interpersonal variables (e.g., compassion, prosocial behavior), and more fine-grained measures of character strengths processes, alongside objective or multi-method assessments such as behavioral tasks or ecological momentary assessment. In addition, more detailed examination of the PERMA-Profiler subdimensions—positive emotion, engagement, relationships, meaning, and accomplishment—would clarify which specific facets of psychological wellbeing are most responsive to MBSP-derived interventions like MSDL. Longitudinal designs with follow-up assessments would clarify the durability of gains in mindfulness, strengths use, and wellbeing, and process-oriented studies could test mediation models in which changes in mindfulness and strengths use function as key mechanisms underlying improvements in stress and flourishing.

Overall Conclusions

The MSDL program proved to be an effective intervention for improving subjective and psychological wellbeing, strengths use, and mindfulness, and for significantly reducing stress in university students. Its benefits extend across diverse populations, being particularly potent for those with less prior knowledge of these practices, making it a scalable and valuable tool for mental health in higher education.

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