Self-compassion, meaning in life, and experiential avoidance explain the relationship between meditation and positive mental health outcomes

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Abstract
Objective: Despite consistent evidence for the beneficial effects of meditation on mental health, little is known about the mechanisms that make mindfulness meditation effective.

Method: The levels of mental health, self-compassion, presence of meaning in life, and experiential avoidance of meditators (n = 414) and nonmeditators (n = 414) were measured and compared. Bootstrap-based structural equation modeling (SEM) modeling analyses were used to test multiple-step multiple-mediator models.

Results: Meditation was positively associated with mental health, although the regularity of practice was an influential element to be considered. Significant indirect effects of meditation on mental health through self-compassion, meaning in life, and experiential avoidance were found. SEM models were able to account for 58% of the variance in mental health scores.

Conclusions: Self-compassion, presence of meaning in life, and reduced experiential avoidance may be active components of healthy meditation practices. Identifying the mechanisms involved in effective meditation practices has relevant implications for well-being and mental health-promoting interventions.

Keywords
experiential avoidance, meaning in life, meditation, mental health, mindfulness, self-compassion
Contemporary psychology is undergoing an extraordinary and perhaps unprecedented interest in the study of meditation, especially mindfulness-based practices. The training of mindfulness skills, frequently in combination with exercising benevolent attitudes and exposing oneself to inner experiences with a flexible and open attitude, has demonstrated usefulness in dealing with psychological issues, especially when depression, anxiety, negative emotions, and stress symptoms are involved (Chiesa & Serretti, 2011; Grossman, Niemann, Schmidt, & Walach, 2004; Khoury et al., 2013; Sears & Kraus, 2009). Meta-analyses addressing the potential effects of meditation have reported its beneficial effects concerning mental health. Eberth and Sedlmeier (2012) reviewed research analysing the effects of mindfulness meditation in nonclinical settings and found small- to medium-sized effects on a variety of variables, such as anxiety, positive and negative emotions, stress, and well-being, among others. Results revealed that “pure meditation” practices (e.g., Zen, Vipassana, etc.) mostly affected mindfulness-related variables whereas Mindfulness-Based Stress Reduction programs yielded stronger effects on well-being related variables. Loving-Kindness Meditation (LKM), a practice that involves not only the cultivation of awareness-related skills but also aims at developing compassionate, warm-hearted attitudes toward others and the self, has been demonstrated to reduce self-reported depression, increase positive emotions, and improve emotional well-being (Fredrickson et al., 2017; Galante, Galante, Bekkers, & Gallacher, 2014; Zeng, Chiu, Wang, Oei, & Leung, 2015), with less conclusive results concerning anxiety (Galante, Bekkers, Mitchell, & Gallacher, 2016; Shahar et al., 2015; Weibel, McClintock, & Anderson, 2017).

Evidence for the positive outcomes of meditation comes also from intervention programs largely based on the practice of mindfulness. Here, meditation-based programs have been found to produce moderate effects on anxiety, depression, and pain in adult clinical populations (De Abreu Costa, de Oliveira, Tatton-Ramos, Manfro, & Salum, 2018; Goldberg et al., 2019; Goyal et al., 2014). However, the positive psychological effects of meditation are not limited to populations with psychological symptoms. In this regard, mindfulness meditation retreats have been found to improve psychological health among healthy adults, with overall medium effects on well-being and depression and large effects on anxiety and stress outcomes (McClintock, Rodriguez, & Zerubavel, 2019). Average moderate effects of meditation on psychological variables, not explained by mere relaxation or cognitive restructuring effects, have been reported among nonclinical adults (Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012). Further, mindfulness can also be considered a trait-like disposition that people present to a greater or lesser extent. As research has shown, people with a higher tendency to be mindful in general daily life have been found to present higher levels of well-being and lower emotional distress (Bowlin & Baer, 2012; Bränström, Duncan, & Moskowitz, 2011; Crego, Yela, Gómez-Martínez, & Karim, 2019).

1.1 Meditation and self-compassion

Despite the different methods of practice (e.g., mindfulness meditation, LKM, yoga, etc.), meditation is usually focused on cultivating awareness of thoughts, emotions, and sensations, while maintaining a particular attitude (e.g., curiosity, openness, flexibility, benevolence, etc.) toward such inner experiences. In this matter, self-compassion has been revealed as a construct that may play a role in meditation practice worth analyzing. According to Neff (2003, 2016), self-compassion includes three components, that is, being kind toward oneself rather than harshly self-critical, recognizing that suffering, pain, and difficulties are common to our shared human nature rather than feeling isolated, weird, or alienated, and being mindfully aware of potentially aversive inner experiences, such as disturbing thoughts, negative emotion, and upsetting sensations, instead of over identifying and fusing with these experiences. Research has found that a higher frequency of meditation is associated with higher levels of self-compassion, dispositional mindfulness, and happiness (Campos et al., 2016). Further, self-compassion has been consistently
connected with positive mental health outcomes, decreased psychopathology, and higher positive well-being (Bluth & Neff, 2018; Zessin, Dickhäuser, & Garbade, 2015). For example, Baer et al. (2012) showed that mindfulness and self-compassion mediated the relationship between long-term meditation and psychological well-being in a nonclinical sample.

Interestingly, Germer and Neff (Germer & Neff, 2013a, 2019; Neff & Germer, 2018) have developed a meditation-based approach, the Mindful Self-Compassion Program (MSC), to train self-compassionate attitudes, which has demonstrated connections with positive mental health outcomes, as growing research shows. For example, enhancing self-compassion has been found to promote well-being (Neff & Germer, 2017) as well as play a beneficial role concerning depression and anxiety-related symptoms (Albertson, Neff, & Dill-Shackleford, 2015; Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016; Finlay-Jones, Xie, Huang, Ma, & Guo, 2017; Friis, Johnson, Cutfield, & Consedine, 2016; Germer & Neff, 2013b; MacBeth & Gumley, 2012; Neff & Germer, 2013; Smeets, Neff, Alberts, & Peters, 2014). Moreover, two recent meta-analyses have found that self-compassion-related interventions produce moderate improvements in self-compassion, mindfulness, stress, self-criticism, anxiety, and depressive symptoms (Ferrari et al., 2019; Wilson, Mackintosh, Power, & Chan, 2019) as well as large effects on measures of eating behavior and rumination (Ferrari et al., 2019).

1.2 | Meditation and presence of meaning in life

The presence of meaning in life has been suggested to be connected with both meditation and self-compassion. In fact, a person's recognition of what is valuable and truly matters in life could explain, to some extent, the positive effects of mindfulness on mental health and well-being (Crego et al., 2019; Shapiro, Carlson, Astin, & Freedman, 2006; Shonin & Van Gordon, 2016). Jacobs et al. (2011) and Bloch et al. (2017) found that participating in meditation trainings with a focus on mindfulness as well as loving-kindness and compassionate attitudes toward oneself and others, contributed to increased assessments of meaning and purpose in life in meditators. Higher levels of self-compassion have also been found associated with increased presence of meaning in life, with large and medium effect sizes being reported (Homan, 2016; Marshall & Brockman, 2016; Phillips & Ferguson, 2013).

Similarly to self-compassion, the presence of meaning in life is related with positive outcomes, such as life satisfaction (Compton, 2000; Cotton Bronk, Hill, Lapsley, Talib, & Finch, 2009; Steger & Kashdan, 2007; Steger, 2017; Steger, 2018; Steger, Frazier, Oishi, & Kaler, 2006), subjective well-being (Scannell, Allen, & Burton, 2002; Schnell, 2009; Zika & Chamberlain, 1992), and mental health (Glaw, Kable, Hazelton, & Inder, 2017).

1.3 | Meditation and experiential avoidance

Experiential avoidance is defined as the individual's tendency to avoid uncomfortable inner experiences (i.e., thoughts, emotions, and sensations), although doing so may lead to undesirable outcomes in the long-term and oppose one's goals and values (Hayes, Strosahl, & Wilson, 2011). This construct has been proposed among the mechanisms that may explain beneficial outcomes of mindfulness (Brown, Bravo, Roos, & Pearson, 2015; Shapiro et al., 2006). Alda et al. (2016) found lower levels of experiential avoidance in a group of Zen meditation experts, compared with healthy matched nonmeditators. These authors suggest that mindfulness and Zen meditation promote acceptance, that is, the absence of experiential avoidance, which would play a central role concerning the positive outcomes of meditation. Similarly, a study comparing Vipassana meditation practitioners and nonmeditators found that cognitive flexibility, that is, reduced experiential avoidance, was observed after regular meditation practice. Again, meditation practice was connected with positive outcomes such as reduced anger, hostility and fatigue and increased vigor (Kasai et al., 2017). A meta-analysis by Khoury et al. (2017) assessed the effects of a variety of meditation retreats on psychological outcomes in the general population. They found large
effects for meditation on measures of anxiety, depression, and stress, and suggested that mindfulness, compassion, and acceptance could be potential mechanisms explaining the changes.

The avoidance of experiences has been highlighted as a risk factor for psychopathology and worsened well-being. For instance, higher levels of experiential avoidance are present among people with posttraumatic stress disorder, social anxiety, obsessive-compulsive symptoms, stress perceptions, and major depressive disorder, among a variety of psychological disturbances (Bond et al., 2011; Gloster, Klotsche, Chaker, Hummel, & Hoyer, 2011; Kashdan, Morina, & Priebe, 2009; Tyndall et al., 2018). Experiential avoidance also appears to be negatively associated with satisfaction with life, psychological well-being, and quality of life (Kashdan et al., 2009; Machell, Goodman, & Kashdan, 2015; Mitmansgruber, Beck, Höfer, & Schüßler, 2009). Moroz and Dunkley (2019), using a longitudinal research design, found that experiential avoidance predicted increases in depression and anxiety symptoms. Moreover, the deleterious effects of passive coping strategies on anxiety, depression, and emotional and psychological well-being may be accounted for, to some extent, by experiential avoidance (Fledderus, Bohlmeijer, & Pieterse, 2010; Kashdan, Barrios, Forsyth, & Steger, 2006). As Hayes et al. (1996) have highlighted, many forms of psychopathology can be viewed as desadaptive attempts to escape and avoid emotions, thoughts, memories, and other private experiences.

1.4 | Relationships among self-compassion, meaning in life, and experiential avoidance

Experiential avoidance could be a possible mediator of the relationship between meaning in life and positive outcomes. Some findings appear to grant plausibility to this suggestion. Negative relationships between purpose or meaning in life and experiential avoidance have already been reported (Gámez et al., 2014; Kashdan & Kane, 2011). Meaningfulness may operate as a motivational component (George & Park, 2016; Martela & Steger, 2016). For instance, McKnight and Kashdan (2009) have suggested that people pursuing life purposes would be less prone to avoidance behaviors, more motivated to persist in the face of difficult situations and present more flexible responses to potentially traumatic life events than individuals lacking significant life aims. Interestingly, Kashdan and Breen (2007) found that experiential avoidance fully mediated the relationship between materialistic values (i.e., the pursuit of goods, income, and wealth) and impoverished subjective well-being.

In addition, experiential avoidance could also mediate the relationship between self-compassion and psychological outcomes. As Marshall and Brockman (2016) have shown, self-compassion and experiential avoidance are strongly and negatively associated. Similarly, self-compassion has been found to negatively correlate with emotional avoidance coping (Gillanders, Sinclair, MacLean, & Jardine, 2015). Considering that mindfulness is a dimension of self-compassion, the rationale for a mediating effect may also be drawn from theory and research on the mechanisms proposed to explain the effects of mindfulness-based interventions. Here, both enhanced awareness of inner experiences and particular attitudes entailed in mindfulness may operate as a form of exposure to difficult thoughts, feelings, and sensations, and, in turn, lead to reduced distress (Baer, 2009; Gu, Strauss, Bond, & Cavanagh, 2015; Hölzels et al., 2011; Shapiro et al., 2006; Treanor, 2011).

1.5 | The present study

Some years ago, a previous meta-analysis identified an open question in the field of meditation, that is, why and how meditation works (Sedlmeier et al., 2012). At the present time, in spite of increasing research about the relationships between meditation-based approaches and mental health, the answer remains elusive. Previous research has suggested some potential mechanisms to explain the effects of mindfulness on mental health-related outcomes, highlighting the possible mediating role of variables such as decentering, value clarification, exposure, cognitive/behavioral flexibility, self-management (Brown et al., 2015; Shapiro et al., 2006), and attention monitoring and acceptance of inner experiences (Lindsay & Creswell, 2017). However, despite the merits of these
contributions, results are not yet conclusive. Remarkably, Gu et al. (2015) analyzed a variety of possible mediating variables involved in mindfulness-based interventions’ effects, and found preliminary but insufficient evidence for self-compassion and psychological flexibility. Similarly, a recent meta-analysis has emphasized that research should aim at shedding light on the mechanisms of change involved in self-compassion interventions (Ferrari et al., 2019).

Drawing from these suggestions, this study attempts to deepen our knowledge of the possible active components of meditation. Based on previous research, three potential explanatory variables (i.e., self-compassion, meaning in life, and experiential avoidance) will be explored, and the following hypotheses will be tested:

**HYPOTHESIS 1.** The practice of meditation will be associated with higher levels of mental health. People that meditate are expected to report higher mental health, in comparison with nonmeditators (H1.1). In particular, the salutary effects of meditation on mental health will be expected for those engaged in regular practice, in contrast with occasional meditators and nonmeditators (H1.2).

**HYPOTHESIS 2.** The association between the practice of meditation and mental health could be accounted for by some mediating variables, that is, self-compassion, presence of meaning in life, and experiential avoidance. In this regard, significant indirect effects of meditation on mental health through the three proposed mediators are expected (H2).

**HYPOTHESIS 3.** Meditation is expected to be associated with increased self-compassion, higher presence of meaning in life, and lower experiential avoidance (H3.1). In addition, we expect that self-compassion, as defined by Neff (2003) will play a key role. The association between meditation and greater presence of meaning in life is expected to be explained, to some extent, by the higher levels of self-compassion connected with meditation practice (H3.2). Likewise, higher levels of self-compassion and presence of meaning are expected to account for the association between meditation and reduced experiential avoidance (H3.3).

**HYPOTHESIS 4.** Higher levels of self-compassion, presence of meaning in life, and lower levels of experiential avoidance are expected to be connected with higher levels of mental health (H4.1). To some extent, the effects of self-compassion on mental health would be explained by increased meaning and reduced experiential avoidance (H4.2), while the connection between presence of meaning and mental health would be explained, to some degree, by reduced experiential avoidance (H4.3).

2 | METHODS

2.1 | Sample and procedure

The sample was comprised of 828 participants (92.4% female), with a mean age of 34.58 years (SD = 15.29), ranging from 18 to 70 years. Most of the participants (67.4%) reported having university-level education (i.e., graduate or postgraduate studies). Concerning their job status, 39.5% of participants were active workers, 29.5% were students without employment allowing them economic independence, 14.9% were unemployed, 8.6% were retirees, and 7.6% reported other labor-related situations. A total of 19 nationalities were represented, with most of participants coming from Venezuela (45.4%), Nicaragua (9.4%), Bolivia (7.6%), Argentina (5.8%), Paraguay (5.1%), and Dominican Republic (5.1%), with other Latin American countries and Spain each representing <5%.
This study uses data from a larger database collected in 2018, which included a total of 1373 participants that completed an online questionnaire. This total sample comprised people from Latin America and Spain with a mean age of 33.74 years ($SD = 14.93$) that ranged from 18 to 70 years. Most of them (92.3%) were female. The respondents were recruited through advertisements in online social networks. In addition, a snowball method was used, and participants were encouraged to share the survey link among their contacts. Potential participants were informed that this study was part of a research project aiming at knowing more, from a psychological perspective, about meaning in life, mindful living, health, and well-being. Participation in the survey was voluntary and respondents did not receive any compensation for filling out the questionnaire. Informed consent was obtained from all participants. The Committee for Ethics in Research of the Pontifical University of Salamanca (Spain) supervised and approved the research design. The database included responses from 414 persons that reported practicing meditation. These participants constitute the meditation group in the present study. For comparison purposes, 414 participants (nonmeditators group) were randomly selected from the remaining 959 nonmeditators in the data set.

2.2 | Data analyses

Descriptive statistics (mean, standard deviation, and frequencies) were calculated to characterize the total sample as well as groups formed on the basis of meditation practice (i.e., nonmeditators and meditators, of which there were regular and occasional meditators). Between-group comparisons were carried out by means of $t$ test and analysis of variance procedures. Posthoc test and pairwise comparisons, using Bonferroni adjustment, were also conducted. For all of these analyses, the $r$ effect-size measure is reported. Pearson's $r$ bivariate correlation was calculated to analyze possible associations among quantitative measures, while Pearson's $\chi^2$ tests were conducted to analyze possible associations between categorical variables.

This study mainly relies on the use of structural equation modeling (SEM) to analyze total effects, indirect effects (i.e., mediation), and direct effects that were stated in the proposed hypotheses. In this regard, point estimates and 95% bias-corrected (BC) bootstrap confidence intervals (percentile method) for these effects were calculated using 5,000 bootstrap samples. Statistically significant effects, different from zero with 95% confidence, are obtained if zero is not between the lower and upper bound of the BC confidence interval (Hayes, 2009, 2018). According to Iacobucci (2008), SEM modeling allows simultaneously testing possible mediation effects, identifying if a particular mediation is independent of the effect of the other mediators. Two models comprising multiple-step multiple mediators were used to test the proposed hypotheses. In Model 1, meditation versus nonmeditation was the independent variable, while regular meditation versus nonmeditation and occasional meditation versus nonmeditation were two independent variables in Model 2. In both, Models 1 and 2, self-compassion, meaning in life, and experiential avoidance were the multiple mediators, and mental health outcomes were the dependent variable.

As potential multicollinearity could be a cause of concern due to correlations among the study variables, quantitative variables were standardized before running SEM analyses. All analyses were carried out using the statistical package IBM SPSS 19 and AMOS 16 (IBM, Armonk, NY).

2.3 | Instruments

2.3.1 | Practice of meditation

Participants were asked about their practice of mindfulness-related meditation with a single-item measure (Do you have previous experience in mindfulness-related meditation practices?). To classify the participants on the basis of
their practice, three response options were offered: “Yes, I usually practice mindfulness meditation exercises, at least once per week” (regular meditators), “Yes, I have practiced mindfulness meditation exercises, but only occasionally and not on a weekly basis” (occasional meditators), and “No, I have never practiced mindfulness meditation” (nonmeditators). Regular meditators were also asked about the characteristics of their practice (e.g., number of days per week that exercises are performed, length of meditation sessions, years of experience).

2.3.2 | Self-compassion

The Spanish version of the 26-item Self-Compassion Scale was used (Garcia-Campayo et al., 2014; Neff, 2003). This scale measures the construct of self-compassion as defined by Neff (2003), that is, considering that self-compassion entails being kind toward oneself, seeing one's experiences as part of the larger human condition, and being mindfully aware of one's inner experiences, instead of being unkindly, self-critical, feeling isolated or strange, and over-identification with painful thoughts and feelings. An example item is “I'm kind to myself when I'm experiencing suffering.” Participants responded on a 5-points Likert-type scale, where 1 = Never and 5 = Always. Total scores were calculated by averaging each participant’s responses to the items (range, 1–5), with higher scores representing greater self-compassion. Internal consistency was α = .93.

2.3.3 | Meaning in life (meaningfulness)

The Presence of Meaning subscale of the Meaning in Life Questionnaire (MLQ) was used (Steger et al., 2006; Spanish translation of the scale developed by Steger and Zaccagnini that is available at the original author's website http://www.michaelfsteger.com/wp-content/uploads/2013/03/MLQ-Spanish.doc). The MLQ's Presence of Meaning subscale comprises five items that assess the extent to which respondents feel their lives have meaning. An example item is “I have a good sense of what makes my life meaningful.” Participants responded on a 7-point Likert-type scale, where 1 = Absolutely Untrue and 7 = Absolutely True. A total score for each participant was calculated by averaging the five items of the subscale, with higher scorings (range, 1–7) representing higher levels of meaning in life experienced. Internal consistency reliability for the Presence of Meaning items was α = .90.

2.3.4 | Experiential avoidance

The Spanish adaptation by Patrón Espinosa (2010) of the Acceptance and Action Questionnaire (Bond et al., 2011; Hayes, 2005) comprises 10 items intended to measure experiential avoidance, that is, an individual’s unwillingness to be exposed to and accept difficult inner experiences (e.g., thoughts, feelings, sensations) even when doing so leads to behaving in a manner that could be inconsistent with one’s values and goals. Participants rated each item on a 7-point Likert-type scale, with 1 = Never true to 7 = Always true. An example is “My thoughts and feelings do not get in the way of how I want to live my life.” (reversed). Total scores were obtained for each participant by averaging his/her responses to the items, with higher scores representing a higher level of experiential avoidance. The internal consistency was α = .91.

2.3.5 | Mental health

The Mental Health scale of the SF-36 Health Survey (Ware, Snow, Kosinski, & Gandek, 1993; Spanish adaptation by Alonso, Prieto, & Antó, 1995) was used. This scale focuses on identifying possible depressive (e.g., “Have you felt
downhearted and blue”) and anxiety (e.g., “Have you been a very nervous person?”) symptoms. It comprises five items, with a 5-points Likert-type response format. Total scores were obtained following instructions provided by Ware et al. (1993). Higher total scores (ranging from 1 to 5) stand for better self-assessments of mental health status. Internal consistency was \(\alpha = .84\).

### 2.3.6 Control measures

Sociodemographic data, such as gender, age, education level, and labor status were also gathered from participants and used as control variables.

### 3 RESULTS

As mentioned, our sample comprised 414 meditators and 414 nonmeditators. In the meditators’ group, the occasional practice was predominant \((n = 343)\). Regular meditators \((n = 71)\) reported practicing, on average, 4.23 days per week \((SD = 2.02)\), with sessions lasting for 25.70 min \((SD = 17.18)\), and meditating for a mean of 7 years \((SD = 10)\).

Nonmeditators \((M = 32.20, SD = 13.92)\) were significantly younger than meditators \((M = 36.96, SD = 16.22)\), with \(t_{826} = -4.53, p < .001\). Within the group of meditators, regular meditators \((M = 45.79, SD = 15.71)\) were significantly \((t_{412} = -5.20, p < .001)\) older than occasional meditators \((M = 35.13, SD = 15.74)\). Women were similarly represented in the nonmeditator group and the meditator group, with 50.3% of women not practicing meditation and 49.7% meditating. Concerning males, 46% were nonmeditators and 54% were meditators. There was no association between gender and whether or not participants meditate \((\chi^2 = 0.43, df = 1, p > .05)\). The participants’ gender was not associated with whether they were occasional or regular meditators \((\chi^2 = 1.06, df = 1, p > .05)\), with 83.4% of females and 76.5% of male meditators reporting occasional practice.

Concerning the participants’ labor situation, approximately half of the active workers, students, and other labor status reported practicing meditation. However, most unemployed persons (64.2%) did not meditate, while most retirees (71.8%) reported practicing meditation, with \(\chi^2(4) = 24.12, p < .001\). Within the group of participants who meditate, labor status was not associated with regular versus occasional practice \((\chi^2 = 8.57, df = 4, p > .05)\). Education was not associated with meditation practice \((\chi^2 = 1.08, df = 1, p > .05)\), with 47.4% of people who reported not having university studies practicing meditation and 51.3% of participants with graduate or postgraduate studies that did meditate. Within the group of meditators, education was not associated with regular versus occasional practice \((\chi^2 = 1.30, df = 1, p > .05)\).

Overall, the total sample of participants presented moderate scores in self-compassion, meaning in life, experiential avoidance, and mental health, with mean values around the midpoint of the respective response scales (Table 1). No gender differences were observed for these variables, with \(t_{826} = 0.07\) for self-compassion, \(t_{826} = 0.33\) for meaningfulness, \(t_{826} = 0.24\) for experiential avoidance, and \(t_{826} = -0.95\) for mental health \((p > .05\) in all t tests). Age was positively correlated with self-compassion \((r = .37, p < .001)\), presence of meaning in life \((r = .33, p < .001)\), and mental health \((r = .31, p < .001)\), and negatively associated with experiential avoidance \((r = -.36, p < .001)\). Participants with graduate or postgraduate studies reported higher levels of self-compassion \((t_{826} = -2.67, p < .01; r = .09)\), presence of meaning \((t_{826} = -3.59, p < .001; r = .12)\), and mental health \((t_{826} = -2.69, p < .01; r = .09)\), and lower levels of experiential avoidance \((t_{826} = 3.41, p < .001; r = -.12)\), compared with people not having university-level education. Participants also differed on the basis of their labor status as regards self-compassion \((F_{4,823} = 20.81, p < .001; r = .30)\), meaning \((F_{4,823} = 16.39, p < .001; r = .27)\), and mental health \((F_{4,823} = 13.54, p < .001; r = .25)\), with students and the unemployed persons having the lowest values and retirees with the highest scores. In contrast, students had the highest values in experiential avoidance, whereas retirees had the lowest scores \((F_{4,823} = 18.52, p < .001; r = .29)\).
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<th>Meditators (occasional and regular meditators) (n = 414)</th>
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3.1 Effects of meditation on mental health through the proposed mediating variables

As shown in Table 1, people who meditate reported, overall, higher levels of mental health in comparison with nonmeditators. Differences were statistically significant ($t_{826} = -3.86, p < .001$), with a small effect size $r = .13$. This result supports the Hypothesis H1.1.

SEM analysis showed that, after controlling for age, gender, and sociodemographic variables, meditating yielded a significant total effect on mental health, as presented in Table 2 (Model 1). Interestingly, meditation had a significant indirect effect on mental health through self-compassion, meaning in life and experiential avoidance (Table 3, Model 1), which provides evidence for Hypothesis 2. In addition, the direct effects of meditation on mental health were not statistically significant when the proposed mediating variables were taken into account in the SEM model (Figure 1), which indicates that self-compassion, meaning in life and experiential avoidance fully mediated the relationship between meditation and mental health. Overall, the first SEM model was able to account for 58% of the variations in mental health.

3.2 Effects of regular and occasional meditation on mental health through the proposed mediating variables

The regularity of meditation practice was associated with the participants’ mental health, with regular meditators reporting better mental health than occasional meditators, and occasional meditators showing better mental health than nonmeditators (Table 1). These differences were statistically significant ($F_{2,825} = 14.09, p < .001$) and yielded an overall small effect size $r = .18$. Posthoc test showed that the groups (i.e., regular meditators, occasional meditators, and nonmeditators) differed from each other on their mental health scores, although between-group differences presented rather small effect sizes. The differences in mental health scores between regular meditators and occasional meditators ($t_{412} = -3.67, p < .001$) presented an effect size $r = .18$, and the differences between regular meditators and nonmeditators ($t_{483} = -5.10, p < .001$) yielded a medium effect size $r = .23$. This result supports Hypothesis H1.2. A very small effect size $r = .09$ was obtained as regards the differences between occasional meditators and nonmeditators in mental health scores ($t_{755} = -2.58, p = .01$).

Overall, the second SEM model tested, which analyzed the effects of regular and occasional meditation on mental health, taking into account self-compassion, meaningfulness, and experiential avoidance as mediators, explained 58% of the variance in mental health scores. This SEM model revealed that, after controlling for gender,

| TABLE 2 Total effects of meditation on proposed mediators (self-compassion, meaning in life, and experiential avoidance) and mental health |
|---|---|---|---|---|---|
| **Model 1** | **Model 2** | | | | |
| Mediators | Meditators | | Regular meditators | | Occasional meditators |
| | Point estimate | 95% BC CI | Point estimate | 95% BC CI | Point estimate | 95% BC CI |
| Total effects of meditation on | | | | | |
| Self-compassion | 0.29*** | 0.16, 0.41 | 0.68*** | 0.44, 0.90 | 0.22** | 0.08, 0.34 |
| Meaning in life | 0.19** | 0.06, 0.32 | 0.42** | 0.19, 0.61 | 0.15* | 0.01, 0.28 |
| Experiential avoidance | -0.14* | -0.27, -0.01 | -0.42** | -0.63, -0.18 | -0.09 | -0.22, 0.04 |
| Mental health | 0.16* | 0.03, 0.29 | 0.39** | 0.14, 0.62 | 0.12 | -0.02, 0.25 |

Abbreviations: BC, bias-corrected; CI, confidence interval.

*p < .05.

**p < .01.

***p < .001.
<table>
<thead>
<tr>
<th>Indirect effect of meditation</th>
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<tr>
<td></td>
<td>Point estimate</td>
<td>95% BC CI</td>
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<tr>
<td>Through self-compassion, meaning in life, and experiential avoidance on mental health</td>
<td>0.16**</td>
<td>0.06, 0.26</td>
<td>0.41***</td>
</tr>
</tbody>
</table>

Abbreviations: BC, bias-corrected; CI, confidence interval.

*p < .05.

**p < .01.

***p < .001.
3.3 Relationships among meditation, self-compassion, meaning in life, and experiential avoidance

As expected in Hypothesis 3.1, participants who meditate presented significantly higher levels of self-compassion ($t_{826} = -5.88, p < .001; r = .20$), presence of meaning in life ($t_{826} = -4.36, p < .001; r = .15$), and lower experiential avoidance ($t_{826} = 3.60, p < .001; r = -.12$), compared with the group of nonmeditators (Table 1). In addition, differences in self-compassion ($F_{2,825} = 31.97, p < .001; r = .27$), presence of meaning ($F_{2,825} = 16.11, p < .001; r = .19$) and experiential avoidance ($F_{2,825} = 15.27, p < .001; r = .19$) were also observed based on the regularity of practice. Regular meditators always presented higher levels of self-compassion and meaning, followed by occasional meditators, and finally, nonmeditators, who scored lower. Regular meditators presented lower levels of experiential avoidance, compared with occasional meditators and nonmeditators. Posthoc tests and pairwise contrasts indicated significant differences between practice groups. In this regard, regular meditators differed from occasional meditators ($t_{412} = -5.31, p < .001; r = .25$) and nonmeditators ($t_{483} = -7.88, p < .001; r = .34$) in self-
compassion scores, with occasional meditators' self-compassion scores also being different from those of nonmeditators ($t_{755} = -4.00, p < .001; r = .14$). Regular meditators' meaning in life scores differed from occasional meditators' scores ($t_{412} = -3.69, p < .001; r = .18$) and nonmeditators' presence of meaning in life ($t_{483} = -5.46, p < .001; r = .24$). Occasional meditators' meaningfulness scores were also different from those of nonmeditators ($t_{755} = -3.02, p = .003; r = .11$). Finally, regular meditators reported lower experiential avoidance than occasional meditators ($t_{412} = 4.29, p < .001; r = - .21$) and nonmeditators ($t_{483} = 5.43, p < .001; r = - .24$), and occasional meditators reported lower avoidance than nonmeditators ($t_{755} = 2.16, p = .031; r = .08$). However, differences between occasional meditators and nonmeditators cannot be considered significant when the Bonferroni correction for adjusting significance levels in multiple comparisons is applied ($p < .016$).

As shown in Table 2 (Model 1), results from SEM models indicated that meditating yielded significant total effects on self-compassion, presence of meaning in life, and experiential avoidance. The same pattern of relationships was observed for regular meditation (Table 2, Model 2). In contrast, occasional meditation yielded significant total effects on self-compassion and the presence of meaning in life, but not on experiential avoidance.

The indirect effects of meditation on meaning in life through increased self-compassion (H3.2), and on experiential avoidance through increased self-compassion and increased presence of meaning (H3.3), were significant irrespective of the regularity of practice (Table 3, Models 1 and 2).

Interestingly, Figure 1 shows that the direct path from meditation to meaning in life and was nonsignificant, and the respective point estimate was close to zero, which indicates that self-compassion fully mediated the relationship between meditating and increased presence of meaning. A similar pattern was obtained when regular and occasional meditators were considered, as shown in Figure 2.

Concerning the direct path from meditation to experiential avoidance, the SEM model yielded a small but significant positive regression weight (Figure 1). This result revealed an inconsistent mediation effect. As presented, the total and indirect effects of meditation on experiential avoidance are negative, that is, meditating is negatively

FIGURE 2  Multiple-step multiple-mediator model with regular meditation and occasional meditation as independent variables, self-compassion, meaning in life and experiential avoidance as mediators, and mental health as the outcome variable. The standardized direct effect are presented, with 95% bias-corrected bootstrap confidence intervals reported in brackets. Regular meditators and occasional meditators are contrasted against nonmeditators. The effects of gender, age, education level, and labor status on the variables presented in the Model were controlled for; control variables are not depicted to provide a clearer model.
associated with avoidance, overall (Table 2) and through the proposed mediating paths (Table 3). However, when the indirect effect (i.e., the paths involving self-compassion and meaningfulness) is controlled for in the SEM model, the direct path from meditation to avoidance is positive (Figure 1).

When regular meditators and occasional meditators were considered, the direct path connecting meditation with experiential avoidance became nonsignificant for those regularly practicing meditation, indicating that the effects of regular meditation on experiential avoidance may be fully explained by self-compassion and presence of meaning (Figure 2). In contrast, the abovementioned inconsistent mediation effect (i.e., negative indirect effects and positive direct effects) emerged for occasional meditators. For people who only occasionally meditate, when the indirect path involving self-compassion and meaningfulness is controlled for, meditating is positively associated with avoidance.

In conjunction with control variables, meditation was able to account for between 19% and 17% of the variance in self-compassion depending on whether regularity of practice was taken into account (Figure 2) or not (Figure 1), respectively. The proposed SEM models were able to explain 41% and 68% of the variance in meaning in life and experiential avoidance, respectively.

As the proposed multiple-step multiple mediation models are saturated (i.e., zero degrees of freedom) most fit indices cannot be computed, and the Akaike information criterion (AIC) was used to compare the models against alternative nonsaturated models. Lower AIC values indicate a better fit. The multiple-step multiple mediation model depicting (Figure 1) the effects of meditation on mental health showed AIC = 180.00. An alternative nonsaturated model where self-compassion, meaning in life, and experiential avoidance were considered as nonsequenced multiple mediators presented a higher AIC = 1,301.00 and did not adjust to the data ($\chi^2/df = 375.67$; comparative fit index [CFI] = 0.69; normed fit index [NFI] = 0.69; standardized root-mean-square residual [SRMR] = 0.12; root-mean-square error of approximation [RMSEA] = 0.67). Further, the amount of variance in mental health scores explained by the nonsaturated model descended to 44.8%.

Similarly, the saturated multiple-step multiple-mediator model where regular and occasional meditation was considered (Figure 2) presented better fit (AIC = 208.00), compared with an alternative nonsaturated model where the proposed multiple mediators were not sequenced (AIC = 1317.23). In fact, the nonsaturated alternative model again presented very poor fit indices ($\chi^2/df = 371.74$; CFI = 0.70; NFI = 0.70; SRMR = 0.11; RMSEA = 0.67) and was able to explain less variance, that is, 45%, of mental health scores.

### 3.4 Relationships among self-compassion, meaning in life, experiential avoidance, and mental health

Remarkably, self-compassion, meaning in life, experiential avoidance, and mental health were significantly correlated with each other. The higher the self-compassion reported, the greater the presence of meaning in life ($r = .63, p < .001$), lower experiential avoidance ($r = -.80, p < .001$) and the higher the level of mental health ($r = .69, p < .001$) was reported. Similarly, greater presence of meaning was associated with lower levels of experiential avoidance ($r = -.63, p < .001$) and higher mental health scores ($r = .58, p < .001$), with participants reporting greater experiential avoidance also showing lower levels of mental health ($r = -.73, p < .001$). These results provide evidence for Hypothesis 4.1.

Significant total effects of self-compassion on meaning in life, experiential avoidance, and mental health were observed in the SEM models tested (Table 4). As Hypothesis 4.2. predicted, results revealed significant indirect effects of self-compassion on experiential avoidance, through increased meaning in life, and on mental health, through meaning in life and experiential avoidance (Table 5). Concerning the presence of meaning in life, this variable had significant total effects on experiential avoidance and mental health (Table 4). As expected in Hypothesis 4.3., to some extent, the association between meaning in life and mental health could be explained by the significant indirect path involving experiential avoidance (Table 5).
Direct effects among self-compassion, presence of meaning, experiential avoidance, and mental health remained statistically significant for all the paths connecting these variables in the SEM models (Figures 1 and 2).

4 | DISCUSSION

This study aimed to answer a question: Why does meditation work? Our results shed some light on the mechanisms explaining the connection between meditation and mental health, highlighting the key role of three mediating variables, that is, self-compassion, presence of meaning in life, and experiential avoidance.

Before discussing the mediating effects identified, some relevant findings about the relationship between meditating and experiencing positive mental health outcomes should be highlighted. First, people practicing meditation, in general terms, reported better mental health, in comparison with nonmeditators. However, overall, the differences in mental health, although statistically significant, presented a rather low magnitude. Further analysis of this finding may lead us to establish a relevant second point. To experience salutary effects due to meditation, the regularity of the practice is important (Baer et al., 2012; Yela, Gómez-Martínez, Crego, & Jiménez, 2019). As our results indicate, differences in mental health scores between regular meditators and nonmeditators had a medium effect size, which is consistent with previous research conducted in the healthy adult population (Eberth & Sedlmeier, 2012; McClintock et al., 2019; Sedlmeier et al., 2012).

In contrast with regular practitioners, the mental health scores of occasional meditators only slightly differed from those of nonmeditators. Furthermore, when control variables were included in the SEM model, a nonsignificant total effect of occasional meditation on mental health was obtained. In other words, occasional meditation may produce no effects on mental health. Some possible explanations could account for this finding. Meditation may require continuity and regularity of practice so that the psychological mechanisms leading to

| TABLE 4 | Total effects of proposed mediators (self-compassion, meaning in life, experiential avoidance) mediators on mental health |
|---------------------------------|-------------------------------------------------|------------------------------------------------|
| Total effects of self-compassion on: | Point estimate | 95% BC CI |
| Meaning in life | 0.58*** | 0.51, 0.63 |
| Experiential avoidance | -0.78*** | -0.82, -0.74 |
| Mental health | 0.67*** | 0.62, 0.72 |
| Total effects of meaning in life on: | Point estimate | 95% BC CI |
| Experiential avoidance | -0.21*** | -0.26, -0.15 |
| Mental health | 0.23*** | 0.17, 0.30 |
| Total effects of experiential avoidance on: | Point estimate | 95% BC CI |
| Mental health | -0.43*** | -0.51, -0.34 |

***p < .001.

| TABLE 5 | Indirect effects of self-compassion and meaning in life |
|---------------------------------|---------------------------------|-------------------------------------------------
| Through meaning in life | Point estimate | 95% BC CI |
| Through experiential avoidance | -0.12*** | -0.15, -0.09 |
| Through experiential avoidance and experiential avoidance on mental health | 0.41*** | 0.35, 0.49 |
| Indirect effect of meaning in life | Through experiential avoidance on mental health | 0.09*** | 0.06, 0.12 |

***p < .001.
beneficial effects may be activated or developed to some extent, that is, occasional meditators are not taking the adequate “dose” to benefit from the intervention. Not for nothing, meditation-based interventions highly emphasize the importance of continuing meditation exercises once the trainings are ended, as abandonment of practice is associated with relapse (Bondolfi, et al, 2010; Michalak, Heidenreich, Meibert, & Schulte, 2008).

In addition, occasional meditators may resort to meditating only when they face high levels of stress or difficult times. As previous research has found, the reduction of negative emotional experiences such as stress, anxiety, panic, and depression, is the most frequently reported reason for commencing mindfulness meditation (Pepping, Walters, Davis, & O’Donovan, 2016). In statistical terms, the use of meditation exercises limited to stressful situations would make occasional practice a good indicator of challenged mental health, rather than representing a healthy habit. In fact, our results also show an interesting effect concerning the relationship between occasional meditation and experiential avoidance. When the effects of self-compassion and meaningfulness are controlled for, that is, the indirect path of the mediating effects from occasional meditation to avoidance, a significant direct path connecting occasional meditation and higher avoidance emerges. Although the regression weight of this direct path is very low and results should be taken cautiously, this finding may be suggesting that occasional meditation devoid of self-compassion components (e.g., mindfulness, self-kindness, feeling that one is part of a common humanity, etc.) and meaning-related components (e.g., contributing to foster a sense of purpose, mattering, and understanding) may be connected with higher experiential avoidance. As previous research has shown, meditation may have adverse effects in some cases (Dobkin, Irving, & Amar, 2012). For instance, adopting a self-compassionate attitude may be difficult and the person may be harshly self-critical, strong negative emotions may emerge, and avoidance of meditation may be used as a way to cease exposure to inner experiences (Lomas, Cartwright, Edginton, & Ridge, 2015). In addition, researchers have warned about mindfulness being used as a way to avoid reality or defensively short-circuit painful or disturbing emotions by just focusing on the breath (Shapiro, Siegel, & Neff, 2018).

Our study’s major contribution refers to the mediating mechanism that links meditating and mental health outcomes. As presented, self-compassion, meaning in life, and experiential avoidance play a key role in the relationship between meditation and mental health. Meditation’s salutary effects would be experienced by meditators to the extent that the practice increases self-compassionate attitudes, raises the presence of meaning in life, and drives the individuals to accept potentially disturbing inner experiences. This chain-like mechanism appears to operate for both regular and occasional meditators.

Our results are consistent with previous research linking meditation to self-compassion and meaningfulness (Bloch et al., 2017; Ferrari et al., 2019; Jacobs et al., 2011; Wilson et al., 2018), and contributes by highlighting the relevance of experiential avoidance (Hayes et al., 2011; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Remarkably, self-compassion mediated the connections between meditation and greater meaning, that is, the effects of meditation on promoting a meaningful and engaging life can be accounted for by the extent to which meditating generates higher self-compassionate attitudes. Also in line with previous research, our results provide additional evidence of the positive associations between self-compassion and meaning (Homan, 2016; Marshall & Brockman, 2016; Phillips & Ferguson, 2012). Further, for regular meditators, self-compassion, and meaning jointly accounted for the relationship between meditation and lower experiential avoidance. In this regard, meditation may create a safe inner environment for the individual, who learns to adequately manage potentially disturbing thoughts and emotions through adopting self-kind, flexible, accepting, open attitudes, which in turn would contribute to activate motivational elements such as having a life purpose, clarifying what is important in life, and pursuing valuable goals.

4.1 | Limitations and future research

This study’s contributions should be taken cautiously due to its potential limitations. First, SEM models depict connections among variables in a way that may suggest causal relationships but our research is cross-sectional and, therefore, links among variables remain at correlational level. In this regard, longitudinal testing of the
suggested hypotheses and models are highly advisable and would represent a further valuable step. Second, our study focused on mindfulness-based meditation understood in a broad sense. However, meditation practices entail diverse and plural methods, exercises, and orientations. Our study adopted an exploratory approach, and attempted to grasp a common component present in most of these practices, equating meditation with mindfulness or enhanced awareness-related practices. Further research could contribute to deepen our knowledge of this topic by analyzing how different types of meditation may be related to mental health. Third, in the same spirit, future studies are encouraged to collect more precise data about the time-related characteristics (e.g., frequency and duration) and contents of meditation exercises. Our study differentiated regular versus occasional practice of meditation, which revealed a relevant and informative division as regards mental health outcomes and opened compelling questions on what features of meditation may be connected with positive psychological effects. Finally, and connected with the abovementioned first limitation, our models suggested a particular serial sequence of mediating variables, which could have been also suggested to be ordered in a different form. As we said, due to the correlational approach used, alternative sequences of mediators (e.g., lower experiential avoidance leading to the higher meaning and/or self-compassion) could be possible and would have not altered the model adequacy in statistical terms (Stelzl, 1986). Thus, beyond statistical adjustment, mediation models require that the roles attributed to variables in the models be based on previous theory and research. Drawing from the abovementioned previous literature, we proposed the chain from self-compassion, through meaningfulness, to experiential avoidance. Moreover, as presented, additional SEM models with not-sequenced multiple mediators were run, which improved neither the amount of explained variance in mental health nor the models’ fit. Finally, our mediating variables do not exhaust other possible mechanisms involved in the relationship between meditation and mental health. Similarly, additional mediating and/or moderating variables could be explored concerning the relationships among self-compassion, meaning, and experiential avoidance. In this regard, research focused on integrating new possible explanatory variables into the proposed model would contribute to deepen our knowledge of the concrete mechanisms that connect self-compassion and beneficial outcomes.

4.2 | Practical implications

Meditation-based interventions have been applied to a variety of collectives, from students (Bamber, & Morpeth, 2019; Breedvelt et al., 2019) to healthcare professionals (Spinelli, Wisener, & Khoury, 2019). Moreover, meditation approaches are used throughout the life-span, from adolescence (Chi, Bo, Liu, Zhang, & Chi, 2018; Zoogman, Goldberg, Hoyt, & Miller, 2015) to adulthood. Some relevant implications derived from this study’s results are worth mentioning. First, when psychological interventions include the use of meditation, regular versus occasional practice should be encouraged. It seems likely that a person will clearly benefit from meditation only if the mindfulness-based exercises are carried out on a regular basis. Second, our results emphasize the importance of cultivating self-compassion, meaning, and acceptance when meditation exercises are performed and, from a trainers’ perspective, to highlight these components when meditation sessions are planned. This approach could help to strengthen the salutary outcomes of meditation.

5 | CONCLUSION

The regular practice of meditation may promote positive moderate effects on mental health in the general population. Therefore, mindfulness-based exercises are advisable as a method for promoting psychological well-being and health. Further, our results point to three key mechanisms that may explain the links between meditation and enhanced health, that is, increased self-compassionate attitudes, meaning, and acceptance of inner experiences.
REFERENCES


