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ORIGINAL PAPER

Effectiveness of the Mindfulness-Based Stress Reduction (MBSR) vs. the Mindful Self-Compassion (MSC) Programs in Clinical and Health Psychologist Trainees

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Abstract

Objectives This study compares the effectiveness of the Mindfulness-Based Stress Reduction (MBSR) and Mindful Self-Compassion (MSC) programs in improving mindfulness and self-compassion skills among clinical and health psychology trainees, and analyzes their effects on anxiety and depression.

Methods A total of 88 participants were allocated to three conditions: MBSR training ($n=26$), MSC training ($n=34$), and control group ($n=28$). Their levels of mindfulness, self-compassion, anxiety, and depression were measured at pre- and post-intervention.

Results Compared to the control group, participants in the MBSR training showed significant improvements in mindfulness and reductions in anxiety and depression from pre to post. Participants in the MSC training, compared to the control group, reported significant increases in mindfulness and self-compassion. We observed that anxiety levels remained stable in the MSC group, while participants in the control group reported an increase in their scores over time. The reduction in depression scores observed among MSC participants did not differ, however, from that observed among members of the control group. Mindfulness, self-compassion, and anxiety scores presented similar trajectories in MBSR and MSC groups, while the MBSR group demonstrated a significantly greater reduction in depression levels compared to the MSC group.

Conclusions Incorporating these programs into the psychologists' training should be considered, as desirable skills such as mindfulness and self-compassion are enhanced. MBSR and MSC could contribute to prevent mental health problems in this population.

Keywords MBSR · MSC · Mindfulness · Self-compassion · Anxiety · Depression

A growing body of research has pointed to mindfulness and self-compassion as protective factors against the negative outcomes of emotionally demanding tasks in mental health care contexts (Beaumont et al., 2016; Di Benedetto & Swadling, 2014; Raab et al., 2015; Ray et al., 2013; Thompson et al., 2014; Yela et al., 2020a, Yela et al., 2020b). A typical definition of mindfulness assumes that this construct entails attention monitoring and acceptance-related components, i.e., the self-regulation of attention, keeping focused on the present moment and immediate experiences, and a disposition characterized by curiosity, openness, and acceptance toward experience (Bishop et al., 2004). Previous literature has also distinguished between dispositional and state mindfulness. While the former is understood as a personality-like trait or disposition intrinsic to the person, the latter refers to the specific state of mind cultivated through the intentional practice of meditation (Brown & Ryan, 2004; Rau & Williams, 2016; Tang et al., 2016). Interestingly, research has found that increasing state mindfulness by means of a mindfulness-based training may contribute to develop higher levels of mindful disposition (Kiken et al., 2015). A mindful attitude is a component of

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self-compassionate skills. Following Neff (2003, 2016), self-compassion involves 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, instead of over-identifying with or avoiding disturbing thoughts, unpleasant emotions, and upsetting sensations.

Mental health professionals are exposed to occupational risks, which can lead to serious difficulties, such as depression and anxiety-related problems, especially in the early stages of their careers (Lim et al., 2010; Volpe et al., 2014). Research has indicated that psychologists in training are vulnerable to high levels of stress, fatigue, self-criticism, burnout, and compassion fatigue (Finlay-Jones et al., 2015, 2017; Turgoose & Maddox, 2017). According to Beaumont and Hollins-Martin (2016), between 25 and 73% of psychology students have experienced high levels of stress at some point during their training.

Less experienced and younger professionals show higher levels of "compassion fatigue," compared with expert therapists (Rossi et al., 2012; Sprang et al., 2011). Turgoose and Maddox (2017) found that high levels of mindfulness were associated with lower compassion fatigue, suggesting that mindfulness could act as a protective factor against compassion fatigue. Low levels of self-compassion may make therapists more vulnerable to experiencing stress in their professional practice (Beaumont & Hollins-Martin, 2016).

In general, emotional problems are characterized by the tendency to experience frequent and strong negative emotional responses (e.g., anxiety, fear, anger, sadness), thoughts of uncertainty, unpredictability, harsh self-criticism, and worries about past or future events. These aversive inner experiences may increase avoidant responses, which have been posited to play an important role in the maintenance of anxiety and depression symptoms (Eustis et al., 2016, 2020; Naragon-Gainey & Watson, 2018; Osma et al., 2021). Mindfulness- and self-compassion-based interventions aim at reducing experiential avoidance by altering how individuals respond to their inner experiences and promoting awareness of such emotions, thoughts, memories, and sensations while maintaining an open, curious, and compassionate attitude (Yela et al., 2020a; Yela et al., 2020b).

Therefore, cultivating mindfulness and self-compassion skills could be a fundamental aspect for health science students (Davalos-Batallas et al., 2020). Concerning clinical psychologists and psychotherapists in training, mindfulness-based interventions may be useful to promote a variety of positive outcomes: enhanced compassion and empathy, awareness, self-compassion, mental health, and emotion regulation (Dorian & Killebrew, 2014; Hemanth & Fisher, 2015; Hopkins & Proeve, 2013; Shapiro et al., 2007). Clinical psychologists and trainees may find that participating in mindfulness or self-compassion training programs can increase their understanding of the client perspective, and also have a positive impact on their levels of compassion, personal and professional well-being, and job performance (Finlay-Jones, 2017; Grepmair et al., 2007; Rimes & Wingrove, 2011). In particular, Finlay-Jones et al. (2015) have found that self-compassion is negatively associated with emotion regulation difficulties and stress among psychologists. Similarly, Boellinghaus et al. (2013) found that psychological therapists in training who had previously attended a mindfulness-based cognitive therapy (MBCT) course and then took part in a loving-kindness meditation (LKM) course consisting on 6-h-long group sessions reported improvements in self-awareness, self-compassion, compassion toward others, and beneficial effects on their therapeutic skills. Based on a literature review, Boellinghaus et al. (2014) have suggested that cultivating self-compassion and other-focused concern through mindfulness-based interventions and LKM practices could potentially reduce burnout, increase well-being, and enhance relationships with clients among healthcare professionals.

Despite the evidence that loving-kindness meditation may improve mood and boost therapists' empathy and personal resources (Bibeau et al., 2016; Cohn & Fredrickson, 2010), its use among mental health professionals is still scarce. Only one pre-post study (Yela et al., 2020a, Yela et al., 2020b) has evaluated the effectiveness of the Mindful Self-Compassion (MSC) program (Germer & Neff, 2013, 2019; Neff & Germer, 2013, 2018), as a method for improving self-compassion, mindfulness, and well-being among clinical and health psychology trainees. The results indicated that the improvement in self-compassion, mindfulness, and psychological well-being was associated with the degree of participants' commitment to the practice of MSC. Neff and Germer (2013) have suggested that the Mindful Self-Compassion (MSC) program could be complementary to Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1994) or Mindfulness-Based Cognitive Therapy (MBCT) programs (Segal et al., 2002), in which more time was devoted to training mindfulness skills. Recently, Pérula de Torres et al. (2021) found that an 8-week MBSR training program, complemented by mindful and self-compassion practices, improved mindfulness and self-compassion skills among healthcare professionals. These authors advocated for studies comparing the effectiveness of abbreviated mindfulness-based interventions and the standard versions of the MBSR and MSC programs.

Testing the relative effectiveness of different interventions that include mindfulness and/or self-compassion as components is relevant for research. As presented, both mindfulness and self-compassion overlap to some extent, as they include a focus on the present moment and an attitude of acceptance toward experiences. In fact, a reduced level of

experiential avoidance is one of the mechanisms that have been proposed to explain the beneficial effects of meditation practices (Alda et al., 2016; Brown, et al., 2015; Khoury et al., 2017; Shapiro et al., 2006; Yela et al., 2020a, Yela et al., 2020b). It is therefore plausible that MBSR and MSC trainings will have partly similar effects. However, there are also differences between the two protocols, which may lead to differential effects. For example, while MBSR training places a greater emphasis on attention regulation practices and decentering, MSC mainly works on enhancing self-kindness and reducing self-criticism and feelings of isolation.

As Neff and Germer (2013) observed, the MBSR program could act as a possible active control group for a randomized-controlled study in the sense that both could have common but not identical effects. They also proposed that the MBSR program is probably more effective in improving mindfulness, while the MSC program is more effective in teaching self-compassion.

Self-care training is needed for clinical psychology students (Pakenham, 2017). Moreover, the Personal Practice model suggests that self-experiential learning may be helpful for therapists both at the personal and professional development levels (Bennett-Levy & Finlay-Jones, 2018). According to Neff and Germer (2013), teaching the MSC program to clinicians and healthcare professionals is a promising research direction, as this training could help these individuals cope with the challenges of life, ameliorate suffering, and enhance well-being. It is also necessary to go a step further and evaluate the relative effectiveness of an emerging program, such as MSC, in comparison to that of other programs, such as MBSR, that have already received considerable empirical support. As Ferrari et al. (2019) pointed out, there were no studies of comparative efficacy of MSC with another active group such as MBSR. In this context, our study aims to compare the relative effectiveness of both MBSR and MSC training in increasing levels of mindfulness and self-compassion and reducing levels of anxiety and depression in samples of clinical and health psychology trainees.

Methods

Participants

A total of 88 participants, with a mean of 23 years ($SD = 2.45$) and ages ranging from 19 to 31 years, completed the pre and post questionnaires. Among the sample participants, 77 (81.8%) participants identified as female and 16 (18.2%) as male. All participants were pursuing postgraduate studies or were in their final year of graduate studies in psychology. The sample was considerably homogeneous in terms of sociodemographic characteristics, with all participants coming from middle-class backgrounds. None of the participants was in active employment, married, or had children. The participants had no previous experience with mindfulness- and/or self-compassion-based trainings.

Previous meta-analyses have found moderate effects of mindfulness-based programs, especially MBSR, on anxiety, depression, and mindfulness in non-clinical samples (Eberth & Sedlmeier, 2012; Halladay et al., 2019; Jayawardene et al., 2017; Khoury et al., 2015; Lomas et al., 2019; Querstret et al., 2020; Virgili, 2015). Similarly, meta-analysis research on the effectiveness of self-compassion-related therapies has found moderate effects of interventions on self-compassion, mindfulness, anxiety, and depression (Ferrari et al., 2019; Wilson et al., 2019). Taking into account these results, G*Power software was used to determine the required sample size for a mixed ANOVA 3×2 design where moderate effect sizes are expected. Results revealed that, concerning between-group and interaction effects, in order to detect medium effect sizes $\eta^2_P = 0.06$, a sample size of $N = 81$ is required (effect size specification as in G*Power 3.0, assuming $\alpha = 0.05$, 1-$\beta = 0.80$, correlation among repeated measures = 0, and $\varepsilon = 1$), while $N = 66$ is sufficient as regards within-subject effects. Sensitivity analyses indicated that, with a total sample size $N = 88$, moderate between-group and interaction effects of at least $\eta^2_P = 0.054$ and moderate within-group effects of at least $\eta^2_P = 0.044$ could be detected.

Procedures

This study employs a three-group design using pre- and post-test measures, with two experimental conditions (MBSR and MSC groups) and a control group. The experimental groups were composed of postgraduate students in clinical and health psychology, who were offered voluntary participation in the study as part of their training. Postgraduate students interested in receiving training were then randomly assigned to either the MBSR group ($n = 26$) or the MSC group ($n = 34$) before pre-test. A simple randomization method was used, in which participants were first assigned a number and then a computer-based random distribution of numbers to experimental conditions was carried out (Altaman & Bland, 1999). The control group ($n = 28$) was composed of students in their last year of the Degree in Psychology courses, who were just asked to complete the research questionnaire twice and were not offered to receive a MBSR or MSC training at a later date.

Prior to participation in the study, all individuals were informed that their participation was voluntary, that they would receive no academic or material compensation of any kind, and that they could leave the study at any time. Participants in the experimental conditions were informed that the aim was to offer a mindfulness-based training program whose effectiveness for improving psychological well-being

would be evaluated. In the presentation of the trainings, however, the focus was on the fact that participation was an interesting training experience for future therapists, rather than on research issues. Their commitment would consist of attending a weekly group session for 8 weeks, and answering questionnaires to assess the benefits of the program before and after the program. Participants in the control group were also informed that their data would be used for research purposes. They were asked to participate by completing a questionnaire at two points in time in order to analyze the evolution of their levels of well-being.

Information on the allocation of participants to experimental conditions is provided in Fig. 1. Initially, 140 participants enrolled in this research (43 in the control group, 51 in the MBSR group, and 46 in the MSC group). However, 15 participants in the control group, 7 in the MBSR group, and 4 in the MSC group did not complete the post-test. Following Yela et al. (2020a), Yela et al. (2020b)), a self-reported adherence to treatment greater than 50% was used as a criterion for experimental subjects to be included in the analyses. In the MBSR group, 18 subjects reported low adherence, while 8 participants in the MSC group reported low adherence. Self-reported adherence to treatment was assessed by a single-item measure ("Could you please indicate, in terms of percentage, your degree of adherence to the training programme?") in the post-test questionnaire. Participants were informed that their responses should reflect a global self-evaluation of the extent to which they had attended the program's sessions, been actively engaged in the formal and informal practices, and undertaken homework tasks. The final participation rate in this research was 63%.

All procedures were approved by the Research Ethics Committee of the Pontifical University of Salamanca, recorded as Annex III of the Minutes 17/07/2018.

The MBSR and MSC Programs

The training groups were led by psychologists with training in the MBSR and MSC protocols. All sessions were held in rooms set up for group training sessions at the university where the research was carried out. A maximum of 15 participants per group was established for each course. The programs lasted 8 weeks and took place in weekly face-to-face sessions of 2.5 h. In both cases, the procedures designed by Stahl and Goldstein (2010) for the MBSR training, and by Neff and Germer (2018) and Germer and Neff (2019) for the MSC training, were followed.

The sessions of the MBSR training included the following: (1) What is mindfulness?; (2) Perception and creative

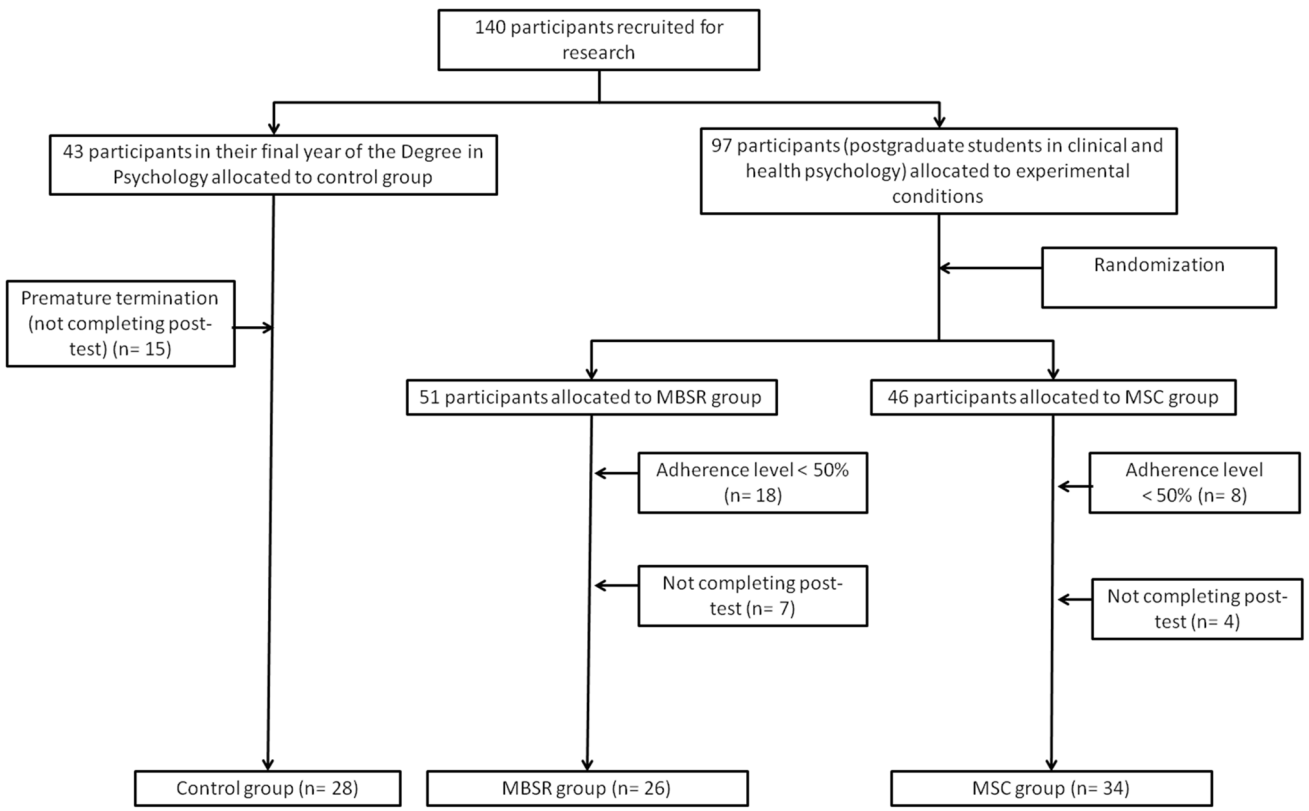

Fig. 1 Flowchart of participant allocation to groups

responding; (3) Mindfulness of the breath and body in movement; (4) Learning about patterns of stress reactivity; (5) Working with stress and fostering resilience through mindfulness; (6) Interpersonal mindfulness and stressful communications; (7) Lifestyle choices, self-care, and time management; and (8) Mindful living: integrating mindfulness into daily life. Participants also attended a 7-h retreat focused on intensive mindfulness practice between sessions 6 and 7.

The MSC program included the following sessions: (1) Discovering Mindful Self-Compassion; (2) Practicing mindfulness; (3) Practicing loving-kindness: (4) Discovering your compassionate voice; (5) Living deeply; (6) Meeting difficult emotions; (7) Exploring challenging relationships; and (8) Embracing your life. Following session 5, the participants attended a 5-h retreat where they intensively went over previously learned self-compassion practices.

Both programs included formal (i.e., meditation sessions) and informal (i.e., exercises that may be carried out throughout the day) practices. The MBSR and MSC trainings also required participants to perform between-session tasks, usually consisting on practicing formal meditation skills already learned and doing informal practices.

Measures

Self-Compassion The Spanish adaptation of the 26-item Self-Compassion Scale was used (Garcia-Campayo et al., 2014; Neff, 2003). This scale measures self-compassion as defined by Neff (2003); i.e., this construct entails feelings of self-kindness, perceptions of common humanity, and mindful awareness of one's inner experiences, as opposed to being excessively self-critical, feeling isolated or weird, and over-identifying with painful memories, thoughts, and feelings. Participants responded on a 5-point 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 $\alpha = 0.905$ at pre-test and $\alpha = 0.913$ at post-test.

Mindfulness The Spanish version of the 39-item Five Facets of Mindfulness Questionnaire (FFMQ) was used (Baer et al., 2006; Cebolla et al., 2012). This instrument evaluates a person's mindfulness capacity in daily life, which includes his/her ability to (1) observe their own thoughts, bodily sensations, and emotions; (2) describe their feelings; (3) act with awareness; and approach inner experiences in a (4) non-judgmental and (5) non-reactive way. Participants responded on a 5-point Likert-type scale where 1 = Never or very rarely true and 5 = Very often or always true. A unique global scale score was calculated by averaging the respondents' answers to the 39 items. Higher scores (range 1–5) were indicative of a higher tendency to be mindful in daily life. The internal consistency reliability was $\alpha = 0.889$ at pre-test and $\alpha = 0.897$ at post-test.

Anxiety The Spanish version of the State-Trait Anxiety Inventory (STAI; Buela-Casal et al., 2011; Spielberger et al., 1982) was used. In this study, only the state anxiety subscale was used. This measure consists of 20 items, where the person must indicate how he/she feels at the time of application of the test (State Anxiety), using a 4-point Likert-type scale according to the intensity, from 0 (Almost never or not at all) to 3 (Very much or almost always). The total score is calculated by adding the item responses, and it may range from 0 to 60, with higher scores indicating a higher level of anxiety. Internal consistency was $\alpha = 0.914$ at pre-test and $\alpha = 0.919$ at post-test.

Depression The Spanish adaptation of the Beck Depression Inventory (BDI; Beck et al., 1961; Sanz & Vázquez, 1998) was used. This measure consists of 21 items with four response options where respondents indicate the presence of symptoms such as sadness, crying, loss of pleasure, feelings of failure and guilt, thoughts or desires of suicide, and pessimism during the last week. The items are rated on a scale from 0 to 3, where 0 represents the minimum intensity and severity of the symptom score and 3 represents a higher presence of the symptoms. The total score, calculated by adding the items, ranges from 0 to 63 points. Higher scores indicate greater depressive symptoms, with the following cutoff points: 0–10 normality; 10–19 risk of depression; 20–29 depression I; and 30–63 depression II. Internal consistency was $\alpha = 0.848$ at pre-test and $\alpha = 0.836$ at post-test.

Satisfaction with the Training and Participation Participants in the MSC and MBSR groups answered additional questions to evaluate the following aspects: (a) Overall rating of the program on a scale from 0 to 10, where 0 indicates the worst score and 10 the best rating; (b) Self-reported adherence to treatment during the 8 weeks of the program as a percentage from 0 to 100%, where 0% indicates no involvement and 100% total involvement; (c) Number of days per week, on average, spent in formal meditation practice during the 8 weeks; (d) Number of times per day, on average, they used the informal practices throughout the course.

Data Analyses

Descriptive analyses (means and standard deviations) were calculated for self-compassion, mindfulness, anxiety, and depression measures, by experimental conditions as well as for the total sample (Table 1). Independent samples *t* tests were conducted to examine possible differences between the MBSR and MSC groups in terms of their level of self-reported adherence to training, level of formal and informal

Table 1 Descriptive statistics (mean and standard deviation) for self-compassion, mindfulness, anxiety, and depression by experimental condition

	Control group ($n=28$)				MBSR ($n=26$)				MSC ($n=34$)				Total sample ($N=88$)							
	Pre		Post		Pre		Post		Pre		Post		Pre				Post			
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Sk*	*K*	*Mean*	*SD*	*Sk*	*K*
Self-compassion	3.14	0.53	3.25	0.50	3.25	0.60	3.53	0.57	3.20	0.61	3.64	0.56	3.20	0.58	− .16	− .89	3.48	0.56	− .32	− .54
Mindfulness	3.24	0.41	3.30	0.36	3.09	0.36	3.59	0.40	3.27	0.45	3.67	0.43	3.21	0.42	.24	.17	3.53	0.43	.07	− .71
Anxiety	18.11	9.02	21.49	10.61	16.83	9.88	11.87	10.01	15.71	9.56	12.94	8.05	16.80	9.44	.31	− .78	15.34	10.31	.75	− .54
Depression	6.63	5.97	6.26	6.38	5.88	4.68	2.46	3.19	4.31	4.58	2.88	3.41	5.53	5.13	− .20	− .39	3.82	4.77	.22	− .67

Sk, skewness; *K*, kurtosis. Sk. Std. Error = 0.257; K. Std. Error = 0.508; for depression, skewness, and kurtosis, values of the log-transformed variable are reported

practice, and assessment of their satisfaction with the program they attended.

Paired-sample *t* tests were used to analyze potential pre- to post-differences, as a first approximation to explore whether changes had occurred within the different groups. Cohen's d_z was used as a measure of effect size of pre-post change.

However, the core of our analysis relies on the use of the General Linear Model. A series of two-factor (Treatment and Time) mixed ANOVA 3 × 2, with a between-group factor (Treatment: MBSR, MSC, and CG) and one factor involving repeated measures (Time: pre- and post-test), were performed, with mindfulness, self-compassion, anxiety, and depression as the respective outcome variables. This procedure allows the analysis of the Time × Treatment interaction, which is essential to establish whether the different conditions, i.e., MBSR, MSC, and CG, have changed differently from the pre-intervention to the post-test moment. Significant interactions found in ANOVA 3 × 2 were further analyzed by means of pairwise 2 × 2 interaction contrasts (MBSR vs. GC, MSC vs. GC, and MBSR vs. MSC). The Bonferroni correction for multiple comparisons was applied, which, in this case, places the *p* level of significance at $p = 0.05/3 = 0.017$. Partial eta squared (η^2_P) is reported as a measure of effect size for ANOVA-based contrasts. In addition, as usually reported in meta-analytic literature, Cohen's *d* effect sizes for comparing the development of groups across time were calculated. As corresponds to our design, effect size calculations were based on the pre-post change in the treatment group means minus the pre-post change in the control group means, divided by the pooled pre-intervention standard deviation (Carlson & Schmidt, 1999; Morris, 2008). The resulting *d* is interpreted according to usual criteria: small ($d = 0.2$), medium ($d = 0.5$), and large ($d = 0.8$) effects (Cohen, 1992).

Deviations from normality were detected for the BDI depression measure, both at pre- and post-treatment. Regarding the homoscedasticity assumption, Levene's tests showed non-compliance again for the BDI scale at post-test ($F_{2,85} = 4.51$; $p = 0.01$). Using a logarithmic transformation in both pre- and post-scores achieved a better fit of the depression variable to normality (Table 1) as well as compliance with the homoscedasticity requirement ($F_{2,85} = 0.82$; $p = 0.45$).

Concerning comparability of groups, a χ^2 test = 8.74 ($df = 2$, $p = 0.01$) showed a different gender composition for the three conditions. In particular, the CG had only one male participant compared to 27 females, while in the MBSR group, males were over-represented, in relative terms, with 9 male members compared to 17 females. In the MSC group, with 28 women and 6 men, the gender composition was fairly close to what would be statistically expected, given the gender distribution in the total sample. Overall, gender differences were only significant in the post-test measurement

of the anxiety variable (female: *Mean* = 16.54, *SD* = 10.75; male: *Mean* = 9.97, *SD* = 5.64; $t_{43.07} = 3.46$; $p < 0.00$). However, due to the reduced number of males in each condition, no further analyses could be carried out on this variable.

Group differences by age were found ($F_{2,68.275} = 6.36$; $p < 0.00$; $\eta^2_P = 0.13$), with participants in the CG (*Mean* = 21.82, *SD* = 1.52) being significantly younger than those in the MBSR group (*Mean* = 24.04, *SD* = 2.76). The MSC group (*Mean* = 23.18, *SD* = 2.47) was not statistically different from the other two groups in terms of age; however, age was not significantly correlated with any of the variables analyzed, at either of the two time points. Nor did it affect the results if entered as a covariate in the mixed ANOVAs.

ANOVA analyses conducted at pre-test revealed that there were no significant differences between groups at baseline in self-compassion ($F_{2,85} = 0.23$; $p = 0.80$; $\eta^2_P = 0.005$), mindfulness ($F_{2,85} = 1.44$; $p = 0.24$; $\eta^2_P = 0.03$), anxiety ($F_{2,85} = 0.49$; $p = 0.61$; $\eta^2_P = 0.01$), and depression ($F_{2,85} = 2.19$; $p = 0.12$; $\eta^2_P = 0.05$).

As mentioned, self-reported adherence to training > 50% was an inclusion criterion for this study. However, additional analyses were conducted on participants who reported low levels of adherence to treatments (i.e., self-reported adherence < 50%). The non-parametric Wilcoxon test for paired samples was used to analyze pre- vs. post-comparisons carried out among low-adherents.

All analyses were carried out using the SPSS 16 statistical package (IBM, Armonk, USA). Sample size calculations and sensitivity analyses were carried out using G*Power 3.1.9.2 software (Faul et al., 2007).

Results

As presented in Table 1, the participants reported intermediate or intermediate–high levels of self-compassion and mindfulness, considering the scale response range (1–5). Concerning anxiety and depression, scores were indicative of low intensity and severity of symptoms, with no clinical significance according to usual cutoffs (Ercan et al., 2015; Sanz & Vázquez, 1998).

As presented in Table 2, ANOVA revealed significant Time by Treatment interaction effects for self-compassion (Fig. 2), mindfulness (Fig. 3), anxiety (Fig. 4), and depression (Fig. 5) scores. The analyses yielded significant main effects of Treatment (between-group factor) for anxiety and depression. Significant main effects of Time (within-subject

Table 2 ANOVA 3 × 2 within-subject, between-group, and interaction effects

	Within-subject (Time)			Between-group (Treatment)			Interaction (Treatment × Time)		
	$F(1,85)$	p	η^2_P	$F(2,85)$	p	η^2_P	$F(2,85)$	p	η^2_P
Self-compassion	30.93	.00	0.267	1.60	.21	0.036	3.84	.03	0.083
Mindfulness	75.83	.00	0.471	2.25	.11	0.050	12.07	.00	0.221
Anxiety	2.21	.14	0.025	4.10	.02	0.088	6.25	.00	0.128
Depression	24.39	.00	0.223	3.79	.03	0.082	5.69	.01	0.118

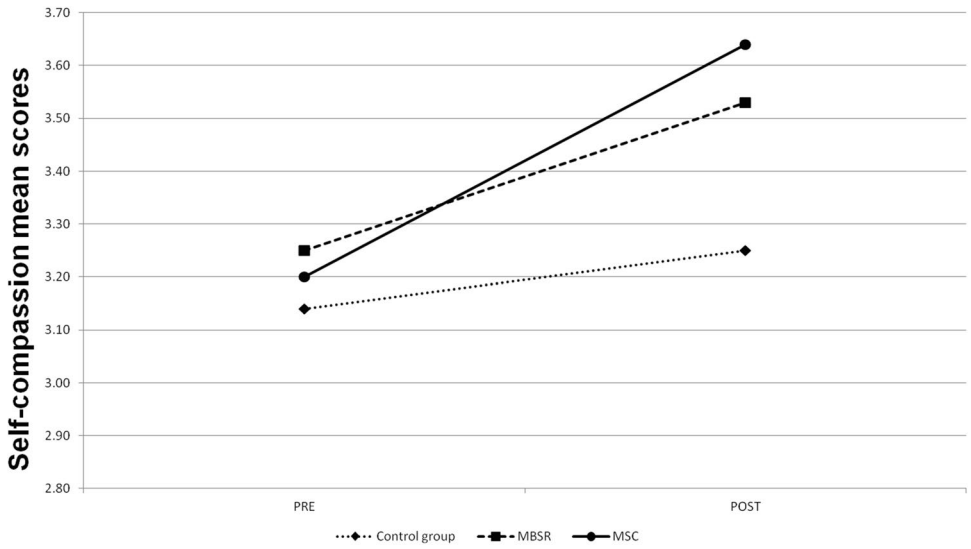

Fig. 2 Self-compassion mean scores at pre- and post-treatment, by group

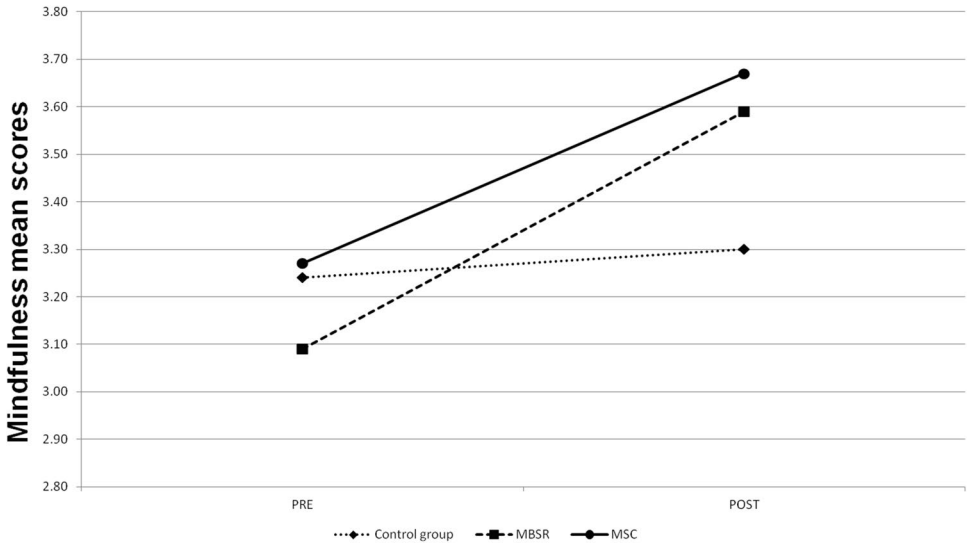

Fig. 3 Mindfulness mean scores at pre- and post-treatment, by group

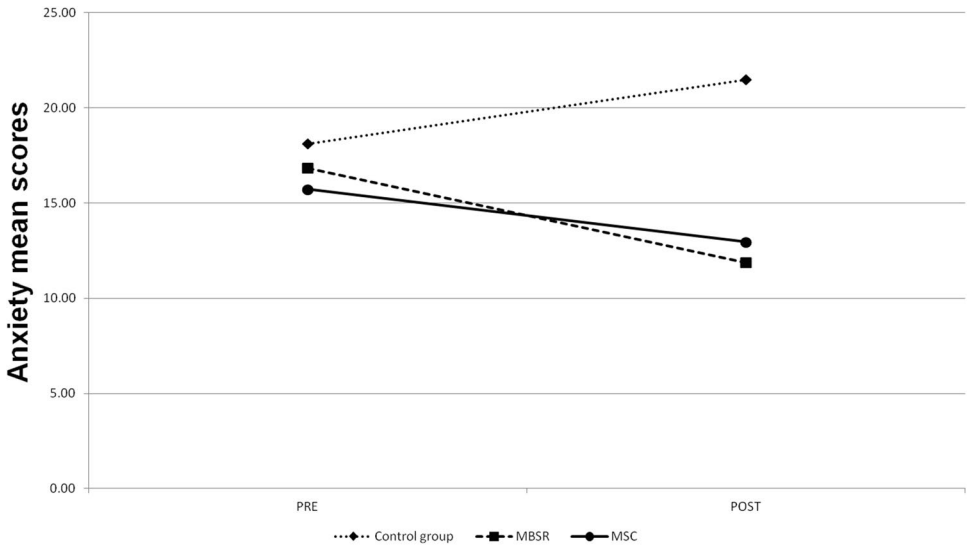

Fig. 4 Anxiety mean scores at pre- and post-treatment, by group

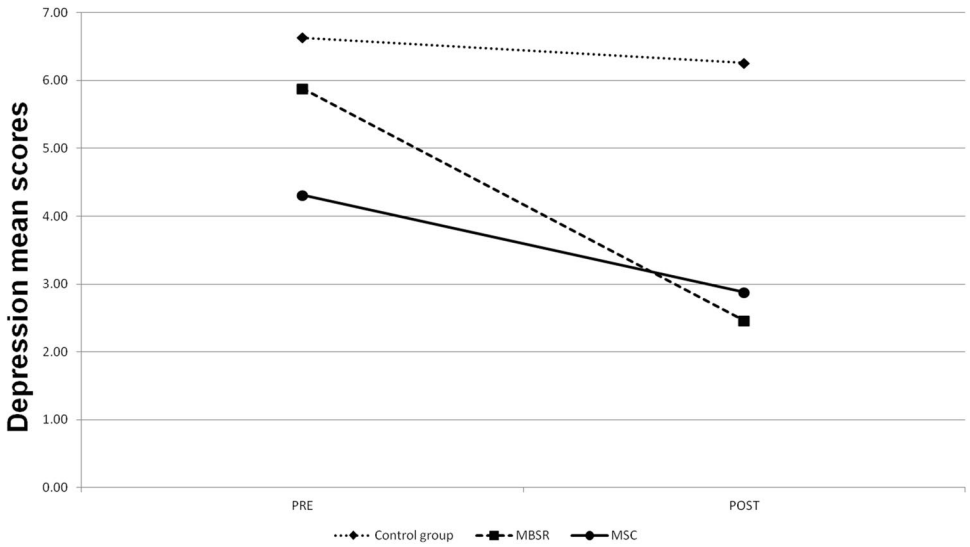

Fig. 5 Depression mean scores at pre- and post-treatment, by group

factor) were observed for self-compassion, mindfulness, and depression.

Pairwise 2 × 2 contrasts revealed that the pattern of change in the MSC and MBSR group was statistically similar concerning self-compassion ($F_{1,58} = 1.45$; $p = 0.23$; $\eta^2_P = 0.02$), mindfulness ($F_{1,58} = 0.89$; $p = 0.35$; $\eta^2_P = 0.02$), and anxiety ($F_{1,58} = 0.73$; $p = 0.40$; $\eta^2_P = 0.01$). However, the MSC vs. MBSR pairwise contrast revealed that depression scores significantly differed across time and conditions ($F_{1,58} = 6.76$; $p = 0.01$; $\eta^2_P = 0.10$). Cohen's d effect sizes for the comparison of the trajectory of MSC and MBSR yielded $d = 0.26$ for self-compassion, $d = 0.24$ for mindfulness, $d = 0.22$ for anxiety, and $d = 0.43$ for depression.

The MBSR group and control group presented a different trajectory from pre to post, with significant Time by Treatment interaction differences in mindfulness ($F_{1,52} = 29.14$; $p < 0.00$; $\eta^2_P = 0.36$), anxiety ($F_{1,52} = 10.79$; $p < 0.00$; $\eta^2_P = 0.17$), and depression ($F_{1,52} = 9.95$; $p < 0.00$; $\eta^2_P = 0.16$). However, no significant differences were observed for the pre- to post-pattern of self-compassion scores when the MBSR group and the control group are compared ($F_{1,52} = 2.49$; $p = 0.12$; $\eta^2_P = 0.05$). Cohen's d effect sizes for the comparison of MBSR vs. CG from pre- to post-intervention were $d = 0.30$ for self-compassion, $d = 1.12$ for mindfulness, $d = 0.87$ for anxiety, and $d = 0.56$ for depression.

Pairwise contrasts comparing MSC vs. CG revealed that the scores on self-compassion ($F_{1,60} = 7.30$; $p < 0.00$; $\eta^2_P = 0.11$), mindfulness ($F_{1,60} = 15.99$; $p < 0.00$; $\eta^2_P = 0.21$), and anxiety ($F_{1,60} = 9.07$; $p < 0.00$; $\eta^2_P = 0.13$) differed across time and conditions. The pattern of change of the MSC group and the control group, on the other hand, did not differ statistically concerning depression ($F_{1,60} = 0.62$; $p = 0.43$; $\eta^2_P = 0.01$). Cohen's d for the MSC vs. CG differences from pre to post yielded $d = 0.57$ for self-compassion, $d = 0.78$ for mindfulness, $d = 0.65$ for anxiety, and $d = 0.20$ for depression.

Comparisons between the pre- and post-tests indicated that participants in both the MBSR and in the MSC groups significantly improved their self-compassion scores, while the control group experienced no change in self-compassion (Table 3). Concerning mindfulness levels, both the MSC and MBSR groups significantly increased their mindfulness scores. Individuals in the control group, on the other hand, maintained stable levels of mindfulness over time.

The participants in the MBSR group significantly reduced their anxiety scores from pre to post, while the MSC group members did not show statistically significant changes in this variable. Interestingly, individuals in the control group significantly increased their anxiety scores over time. Concerning depression, the MSC and MBSR groups significantly reduced their scores over time, while the scores of the control group remained stable.

As presented in Table 4, participants did not differ in their overall degree of self-reported adherence to the training, satisfaction with the program, and their frequency of formal and informal practice, regardless of the program (MBSR or MSC) they attended.

Treatment Outcomes Among Low-Adherence Participants

Low-adherence participants in the MBSR group ($n = 18$) reported a mean adherence of 28.61% ($SD = 11.98$), engaging in formal practice 1.88 ($SD = 1.58$) days per week as average and in informal practice 2.30 ($SD = 2.35$) times a

Table 3 Pre- to post-intervention changes in self-compassion, mindfulness, anxiety, and depression for MBSR, MSC, and control groups

	Control group			MBSR			MSC		
	t ($df = 27$)	Sig. (2-tailed)	Cohen's d_z	t ($df = 25$)	Sig. (2-tailed)	Cohen's d_z	t ($df = 33$)	Sig. (2-tailed)	Cohen's d_z
Self-compassion	−1.76	.09	0.33	−3.26	.00	0.64	−4.55	.00	0.78
Mindfulness	−1.90	.07	0.36	−6.69	.00	1.31	−5.69	.00	0.98
Anxiety	−2.55	.02	0.48	2.24	.03	0.44	1.85	.07	0.32
Depression	0.91	.37	0.17	5.12	.00	1.00	2.22	.03	0.38

Table 4 Levels of involvement, practice, and satisfaction for MBSR and MSC groups

	MBSR ($n = 26$)		MSC ($n = 34$)		t ($df = 58$)	Sig
	Mean	*SD*	*Mean*	*SD*		
Adherence to training (overall level of involvement and practice, in percentage)	68.85	13.73	67.50	11.82	0.41	0.69
Satisfaction with the program (range 0–10)	7.96	1.00	7.51	1.43	1.36	0.18
Average formal practice (days per week)	3.29	1.34	2.88	1.17	1.25	0.22
Average informal practice (times a day)	2.69	1.62	2.85	1.52	−0.39	0.70

day as average. They presented moderated levels of satisfaction with the program (*Mean* = 5.39, *SD* = 2.20). Low-adherence participants in the MSC group ($n = 8$) reported a mean adherence of 33.12% (*SD* = 12.23), engaging in formal practice 1.88 (*SD* = 1.13) days per week as average and in informal practice 1.88 (*SD* = 0.83) times a day as average. They presented moderated levels of satisfaction with the program (*Mean* = 6.37, SD = 2.13).

The Wilcoxon test for paired samples revealed that these participants did not benefit from their respective programs. Low-adherents in the MBSR group did not changed their levels of self-compassion ($M_{Pre} = 3.14$, $SD_{Pre} = 0.50$; $M_{Post} = 3.31$, $SD_{Post} = 0.55$; $Z = -1.72$, $p = 0.09$), mindfulness ($M_{Pre} = 3.27$, $SD_{Pre} = 0.46$; $M_{Post} = 3.43$, $SD_{Post} = 0.33$; $Z = -1.44$, $p = 0.15$), anxiety ($M_{Pre} = 16.83$, $SD_{Pre} = 7.74$; $M_{Post} = 18.05$, $SD_{Post} = 8.26$; $Z = -0.50$, $p = 0.62$), and depression ($M_{Pre} = 4.50$, $SD_{Pre} = 7.01$; $M_{Post} = 3.67$, $SD_{Post} = 3.72$; $Z = -0.81$, $p = 0.42$).

Similarly, low-adherence participants in the MSC group presented no significant gains from pre to post in self-compassion ($M_{Pre} = 3.36$, $SD_{Pre} = 0.45$; $M_{Post} = 3.38$, $SD_{Post} = 0.22$; $Z = -0.140$, $p = 0.89$), mindfulness ($M_{Pre} = 3.26$, $SD_{Pre} = 0.34$; $M_{Post} = 3.38$, $SD_{Post} = 0.31$; $Z = -1.332$, $p = 0.18$), anxiety ($M_{Pre} = 18.88$, $SD_{Pre} = 8.49$; $M_{Post} = 14.88$, $SD_{Post} = 6.20$; $Z = -1.474$, $p = 0.14$), and depression scores ($M_{Pre} = 7.63$, $SD_{Pre} = 7.39$; $M_{Post} = 6.38$, $SD_{Post} = 8.33$; $Z = -0.51$, $p = 0.61$).

Discussion

Overall, our study shows that MBSR and MSC programs produce beneficial results in clinical and health psychology trainees. Compared to a CG, both MBSR and MSC enhanced desirable skills (e.g., mindfulness) and reduced anxiety symptoms. Interestingly, the MSC training yielded similar results to the well-established MBSR training in mindfulness, self-compassion, and anxiety. Despite some differences between MBSR and MSC, which will be discussed below, these results point to the usefulness of incorporating these programs into the psychologists' training.

Taking effect sizes into account (Cohen's d_z; Table 3), the MBSR group experienced moderate changes from pre to post in self-compassion and anxiety, and large changes in mindfulness and depression. The MSC group had large pre-post changes in self-compassion and mindfulness, with small-moderate changes in anxiety (non-significant) and depression.

Even more important, however, is the comparison of the trajectory of the MBSR and MSC groups in relation to the CG. As the pairwise contrasts showed, the pattern of change of the MSC group differed from that of the CG in self-compassion, mindfulness, and anxiety, with moderate Cohen's *d* effect sizes. The trajectory of the MBSR group largely differed from that of the CG concerning mindfulness and anxiety, and moderately with respect to depression. When MBSR and MSC are compared, both trainings produced similar effects on mindfulness, self-compassion, and anxiety; however, MBSR and MSC yielded different effects on depression. Regarding depression scores, Cohen's *d* effect size measure indicated that the magnitude of differences observed between the MBSR and MSC groups across time can be considered moderate.

Effectiveness of the MBSR Program

Participants in the MBSR group improved their scores in self-compassion, mindfulness, anxiety, and depression from pre- to post-treatment. Moreover, when compared to participants in the control group, it is clear that the MBSR group members had followed a different pattern of change concerning mindfulness, anxiety, and depression scores. However, the MBSR group pre- to post-pattern did not significantly differed from that of the control group members in self-compassion scores. This could be accounted for because, as Quist-Møller et al. (2019) point out, the MBSR program does not explicitly work on compassionate skills.

Overall, results are broadly consistent with research in this area (Eberth & Sedlmeier, 2012; Khoury et al., 2013; Quist-Møller et al., 2019; Virgili, 2015). For instance, Sadeghi et al. (2018) found that mindfulness-based training was effective in improving levels of mindfulness, anxiety, stress, and depression. Hofmann et al. (2010) and Stahl and Goldstein (2010) indicated that this program produces decreases in anxiety and stress. Our results are also consistent with Lomas et al. (2019), whose meta-analysis of RCTs found that mindfulness-based interventions produced beneficial effects on anxiety ($g = -0.49$) and depression ($g = -0.55$) among healthcare professionals. Particularly relevant in this regard is the study by Shapiro et al. (2007), in which the MBSR program is also used to train students enrolled in a Master's degree in psychology. These authors found beneficial effects of the program on measures of anxiety and depression (rumination).

Effectiveness of the MSC Program

To a great extent, our results are coherent with the findings of Neff and Germer (2013). The MSC group exhibited a clear trend of improvement from pre to post in self-compassion and mindfulness scores, even compared with the control group. Concerning anxiety, the MSC group remained stable in statistical terms from pre to post. However, this trend is maintained while the control group members showed a significant increase in anxiety levels, which could indicate that the MSC program may have had a protective effect against a

potential increase in anxiety. The results are less conclusive with regard to the depression variable. While the MSC group experienced a significant reduction in their depression levels from pre- to post-test, the reduction was not strong enough to be different from the smooth non-significant reduction also experienced by the control group. However, it should be noted that we used a non-clinical sample, and that the levels of depression in the MSC group were initially very low and indicative of no depression at all, so the scope for improvement was very limited.

Our findings concerning the MSC program were also partially aligned with results from the Kirby et al. (2017) meta-analysis, where there were moderated effect size improvements in self-compassion, compassion ($d = 0.70$), mindfulness ($d = 0.54$), anxiety ($d = 0.49$), depression ($d = 0.64$), psychological distress ($d = 0.47$), and well-being ($d = 0.51$) for compassion-based interventions compared to waitlist control conditions. A meta-analysis by Ferrari et al. (2019) has also shown that self-compassion-based interventions, compared to control groups, produce changes—with moderate effect sizes—in self-compassion ($g = 0.75$), mindfulness ($g = 0.62$), anxiety ($g = 0.57$), depression ($g = 0.66$), and self-criticism ($g = 0.56$). Similarly, a meta-analysis by Wilson et al. (2019) found that self-compassion-related therapies produced improvements in self-compassion ($g = 0.52$), anxiety ($g = 0.46$), and depressive symptoms ($g = 0.40$). These results are partially consistent with those obtained in our research.

Comparison of MBSR and MSC Programs

The comparison of MBSR and MSC programs represents one of the main contributions of our study. As mentioned above, a limitation of the study by Neff and Germer (2013) was that the MSC program was not compared with another active treatment with proven efficacy; and to date, no studies have compared the efficacy of MSC against another active group such as MBSR (Ferrari et al., 2019).

In the present study, the MSC program, compared with the control group, produced beneficial effects on self-compassion, mindfulness, and anxiety. However, the MBSR program, compared with the control group, yielded significant improvements in mindfulness, anxiety, and depression. In sum, both programs produced positive effects, in contrast to the control group, on mindfulness and anxiety. When compared to participants in the control group, the MSC program—but not the MBSR—also yielded improvements in self-compassion, while the MBSR program—but not the MSC—significantly reduced depression. Interestingly, the programs seem to produce effects on variables that are specifically trained, i.e., mindfulness—but not on self-compassion—in the case of MBSR or self-compassion and mindfulness in the case of MSC. Here, Birnie et al. (2010) found that MBSR training produced a large effect size on improving mindfulness ($d = 1.06$) and a moderate effect size on self-compassion ($d = 0.65$). Similarly, Brito-Pons et al. (2018) found that both MBSR and Compassionate Cognitive Therapy (CCT) were effective in improving mindfulness, compassion, and psychological well-being, but the self-compassion-based program had a greater impact on improving empathy and shared humanity (i.e., compassionate skills).

However, beyond the differences in the comparison with the control group, MSC and MBSR programs worked in a practically identical way in self-compassion, mindfulness, and anxiety, with no significant differences in their trends from pre- to post-intervention. An exception was depression, with the MBSR program showing greater effectiveness to reduce depression symptoms. However, this finding requires further investigation. A possible explanatory hypothesis could lie in the emphasis that each program places on different aspects. For example, the MBSR program, which focuses on the cognitive capacity for decentering, could favor the reduction of depressive thoughts while the MSC program approach to reducing potentially depressive thoughts may be more indirect, through the development of benevolent attitudes toward oneself and the reduction of feelings of isolation, which may even involve focusing momentarily on experiences that have caused suffering to the person.

Interestingly, results from participants who meet the inclusion criterion (i.e., self-reported adherence > 50%) showed that both programs did not differ regarding the participants' level of overall involvement and their level of practice during the training, which were moderately high for MBSR and MSC participants. Participants also reported positive satisfaction assessments for both programs, with no differences between MBSR and MSC trainees.

Our research contributes to a growing body of research suggesting that self-compassion practices could reduce stress levels, self-criticism, compassion fatigue, and burnout among healthcare professionals and therapists in training, as well as enhancing their self-care skills and psychological well-being (Beaumont et al., 2016, 2017, 2021; Boellinghaus et al., 2013, 2014; Finlay-Jones et al., 2015; Irving et al., 2009; Shapiro & Carlson, 2017; Yela et al., 2020a, Yela et al., 2020b). Similar beneficial effects have been found for healthcare professionals who are involved in mindfulness practices, especially the MBSR program. Increased mindfulness and mood, and reduced stress, anxiety, and depression have been reported in research conducted among psychology and medical students (Beddoe & Murphy, 2004; Jain et al., 2007; McCollum & Gehart, 2010) after training in MBSR.

Our findings also support Bennett-Levy and Finlay-Jones (2018) emphasis on "personal practice" for psychology trainees, i.e., becoming a user of those techniques they will make use of in their future professional practice. Having participated in MBSR, MSC, or similar groups may help

future therapists gain a better understanding of the strategies and techniques used, empathize with patients, better manage the difficulties they may encounter when working with these types of programs and techniques, and contribute to the consolidation of therapeutic skills and competencies.

Limitations and Future Research

In this study, we randomly distributed participants to the MSC and MBSR groups, which has allowed us to carry out a rigorous comparison of the relative efficacy of both protocols. However, our design did not include a randomized waiting list control group. This issue may entail some risk of bias. For example, the subjects in the control group could have different motivational characteristics, since they do not necessarily have an interest in mindfulness or self-compassion issues. We tried to alleviate these difficulties by prior confirmation that at least there were no significant differences between the groups concerning our variables of interest.

Concerning the instruments used, the self-reported adherence measure appears as very heterogeneous (i.e., entailing different experiences such as attending to sessions, practicing at home, and being engaged with formal and informal practices) and is subjective by nature (i.e., based on a general feeling of the participants). However, a fully objective and precise measure of adherence may be difficult to find and the benefits and costs of different alternatives must be considered. For instance, measuring adherence just as the number of sessions that participants attended may omit important information about homework and informal practices (i.e., mindfulness and self-compassionate practices done during daily life beyond in-session meditation exercises), which are central to this sort of training. In this regard, it is advisable to explore alternative methods for assessing adherence, which combine a more reliable and objective approach without skipping relevant aspects of adherence to mindfulness and self-compassion programs.

Another limitation is the fact that participants were not completely blinded to the study's aim as they knew that the effectiveness of the training was being assessed, and those receiving a training knew whether they were following a MBSR or MSC protocol. However, those participants in experimental conditions were not explicitly informed about the comparative purpose of this research. Another potential limitation is that our sample is not gender balanced. However, the proportion of female participants is the usual gender distribution of psychology students in Spain. Also, we tried to carry out a 3-month follow-up. However, very few questionnaires were received. The final sample size N, and n for the three conditions, were also limitations when it came to carrying out additional statistical analyses that would have allowed us to clarify the role of the variables such as self-compassion and mindfulness. The relatively small sample size has another consequence, which is that at least moderate effect sizes are required to appreciate significant differences (e.g., concerning GLM results). Moreover, our study compares two active treatments (MSC vs. MBSR), which places greater demands on the sample size. The Kirby et al. (2017) meta-analysis of compassion-based interventions' outcomes found moderate effect sizes even when including active control comparisons. However, small differences are likely to emerge between these active conditions, and therefore, larger samples may be needed in order to detect differences. Consequently, small effect sizes in the MSC vs. MBSR comparison may remain undetected in our study. In line with Kirby et al.'s (2017) conclusions, replication of this research using larger samples is encouraged, so that even small interaction effects could be detected. This point, the lack of follow-ups, and the fact that we used a non-clinical sample with low baseline levels in depression and anxiety, may have obscured some of the trainings' effects (e.g., possible effects of MSC program on depression).

Finally, another potential cause of concern is the high proportion of subjects out of those that initially started a training with low self-reported adherence. A greater proportion of low-adherence individuals was found among those who received the MBSR training (49.01%), compared to the subjects assigned to the MSC group (26.08%). These figures make it advisable to investigate whether any characteristic of the programs could make them more acceptable to the participants, from a motivational point of view (e.g., to what extent the work done in the sessions is rewarding for the participants, the interest of the exercises and practices proposed). However, among those who actually adhered to the training sessions, no differences were observed in the degree of satisfaction with MBSR or MSC, as mentioned above.

In the light of our results, a relevant question emerges: What are the common elements involved in the changes observed in mental health as a result of the MSC and MBSR programs? A possible explanation is that both programs emphasize an increase in awareness and acceptance of experiences, or in other words, both pursue a reduction in experiential avoidance. The practice of mindfulness and self-compassion may involve a strategy of exposure to the emotions, thoughts, and sensations experienced by the person. Participants in these programs may be exposed to potentially painful inner experiences during meditation exercises and other practices. At the same time, they are trained to see such events as part of the human condition (explicitly in the MSC program), without reacting to that suffering, accepting its presence without trying to avoid it (explicitly in the MSC and MBSR programs). Previous empirical research has already suggested that reductions in experiential avoidance may be a potential explanatory mechanism of the effects of mindfulness and

self-compassion interventions (Yela et al., 2020a, Yela et al., 2020b). However, longitudinal, well-controlled research focused on the role of reduction in experiential avoidance after the training is yet to be done. Future research may also aim to clarify potential explanatory variables. For instance, longitudinal mediation analyses would be highly recommended (O'Laughlin et al., 2018). In future research, it could be of interest to have follow-up measures. Furthermore, it would be interesting to plan follow-ups that include the beginning of the participants' professional activity. This research would allow the analysis of the extent to which psychologists who received MBSR and MSC trainings may benefit from the acquired skills when they are already working, and if they are protected from burnout and other professional psychosocial hazards.

Testing the effects of the MBSR and MSC trainings, taking into account the dimensions of mindfulness and self-compassion, would also be interesting for future research. Here, Simione et al. (2021) found that the acceptance component of mindfulness, in contrast with the attention monitoring component, strongly predicted reductions in psychological symptoms and higher levels of well-being. Concerning self-compassion, a recent meta-analysis by Chio et al. (2021) found greater effect sizes for the association between negative components of self-compassion and psychological distress, whereas the positive components of self-compassion were more strongly connected with mental well-being, with the exception of common humanity and isolation.

It would also be advisable to analyze possible moderating variables of the effects of the interventions. For example, it would be interesting to explore possible effects due to the gender of the participants, as well as other sociodemographic characteristics (e.g., age, educational level). In addition, the potential moderating role of the level of adherence to training would be worth exploring. In our study, due to the sociodemographic homogeneity of the participants and the rather small sample size, these questions could not be addressed.

Our findings are relevant from at least two points of view. First, they show the usefulness of including trainings such as MSC and MBSR in the education of psychology students. Secondly, the benefits of the MSC program in this population could be, to a great extent, similar to those of a well-established program such as MBSR. Some different outcomes of MSC and MBSR require further clarification and still remain open questions. For instance, MBSR appeared to work best concerning depression symptoms; however, the self-reported adherence rate was higher in MSC. These potential gains and losses should be considered when selecting one training or another to be provided to psychology trainees. Further research (e.g., a qualitative study focused on how participants experience each training program) is needed to understand differences in participation and to gain a deeper understanding of the effects of each program.

Author Contribution LJG: participated in the study conceptualization and design, trained participants in experimental conditions, and wrote the paper. JRY: was responsible for the leading coordination and supervision of the research activity planning and execution, participated in the study conceptualization and design, trained participants in experimental conditions, and wrote the paper. AC: coordinated and supervised the research activity planning and execution, participated in the study conceptualization and design, developed methodological aspects of the research, conducted statistical analyses, and wrote the paper. ARMV: trained participants in experimental conditions and provided critical review, commentary, and revision of the original draft. MAGM: participated in the study conceptualization and design, supervised the trainings, and provided critical review, commentary, and revision of the original draft.

Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request. However, some restrictions may apply due to privacy and ethical commitments.

Declarations

Ethics Approval The study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. This research received approval from the Research Ethics Committee of the Pontifical University of Salamanca (minutes of the meeting 17/07/2018, Annex III).

Consent to Participate Informed consent was obtained from all participants.

Conflict of Interest The authors declare no competing interests.

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