Applying a school-based mindfulness and compassion program ("Escuelas Despiertas") in Spanish secondary schools to reduce psychological distress in adolescents: a randomized controlled trial

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Abstract

Adolescents present high risk of developing mental health problems. Different school-based programs have been designed to prevent and treat the psychological distress that they often experience with disparate results. In this study, we tested the efficacy of a school-based program framed into the "*Escuelas Despiertas*" initiative that teaches adolescents mindfulness and compassion to improve their mental health. In this randomized controlled trial, high school students from four Spanish secondary education centers (N=277) were randomly assigned to a school-based 10-session mindfulness and compassion program ("*Escuelas Despiertas*") or a relaxation program. Participants were assessed at baseline, posttreatment, and at 6-month follow-up. The main outcome was psychological distress (General Health Questionnaire, GHQ-12). Classroom climate and relaxation habits, among others, were assessed as secondary outcomes. Students who underwent the "*Escuelas Despiertas*" program experienced small within group improvements posttreatment in GHQ-12 scores (p=.001, d=0.31) and in relaxation habits (p=.001, d=0.35), although these were not significant compared to the control group. Classroom climate presented a small deterioration in the "*Escuelas Despiertas*" group compared to the relaxation group in the follow-up assessment, but this effect was not statistically significant after correcting for

multiple comparisons. In conclusion, the "*Escuelas Despiertas*" program produced small short-term improvements in psychological distress and relaxation habits in adolescents which were not significant compared to a relaxation intervention. In line with previous studies, it seems that punctual interventions delivered during some weeks might not be the best approach for adolescents, for whom mindfulness-and-compassion-based programs may not be engaging enough for different reasons.

Keywords: adolescents, psychological distress, mindfulness, compassion, randomized controlled trial

1. Introduction

Adolescents constitute a population at high risk of presenting mental health problems. The World Health Organization (WHO) estimates that one in seven 10-19-year-olds experiences a mental disorder, with depression, anxiety, and behavioral disorders being the leading causes of illness and disability among teenagers (WHO, 2021). Adolescence is a vital stage associated with very significant changes and great challenges: shifts in relationships with parents, the exploration of new social and sexual roles, the experience of intimate partnerships, identity formation, future planification, and skills acquisition to become a functional adult, among others (Zarrett & Eccles, 2006). These changes, added to some frequent negative experiences such as bullying, which is the most common expression of violence among adolescents (Modecki et al., 2014), often imply high levels of psychological distress in teenagers, and the implications of such problems are not limited to this life stage but constitute strong predictors of psychological disorders in adulthood (Greenberg & Abenavoli, 2017; Solmi et al., 2022). Thus, it is essential to implement effective strategies that can help teenagers prevent and/or reduce psychological distress.

Considering the central role that schools play for adolescents, who spend a great part of their life in there, different school-based programs (i.e., interventions delivered during school time in the classroom) addressed at preventing psychological distress and promoting mental health have been designed and tested. In their systematic review, van Loon et al. (2020) observed that school-based programs targeting selected adolescents might have the potential to reduce psychological stress; the overall effect size of school-based programs was moderate, yet a high degree of variability was found between the different interventions among which cognitive-behavioral therapy (CBT), relaxation, and mindfulness were the

most common components. CBT has been widely proved to be effective in the treatment of internalizing disorders such as anxiety and depression in adolescents (Wergeland et al., 2021) and relaxation has also proved to be a useful technique to reduce distress, anxiety and depression in this population (Hamdani et al., 2022).

Mindfulness, which can be defined as a present-focused, non-judgmental awareness (Kabat-Zinn, 1991), has been the nucleus of a number of interventions that have resulted in positive health outcomes in different contexts and populations (Jahoda et al., 2017). Mindfulness is a pivotal aspect of the so-called "third wave" of CBT, which does not focus on symptom improvement as a primary aim but emphasizes experiential methods and contextual change. Along with mindfulness, other aspects such as compassion are also key in "third wave" psychotherapies; compassion is an orientation of the mind characterized by sensitivity towards suffering and a commitment to relieve it by recognizing its universality (Feldman & Kuyken, 2011). Compassion can be both experienced towards the self or towards the others and, in the first case (i.e., self-compassion), it has been described as a multifaceted construct that includes self-kindness, common humanity, and mindfulness (Neff, 2003).

The benefits of training mindfulness and (self-)compassion in adolescents have been observed in different aspects, including psychological distress, perceived stress and anxiety (Carsley et al., 2018; Dunning et al., 2019; Galante et al., 2021; Kallapiran et al., 2015; Zoogman et al., 2015), satisfaction with life (Raj et al., 2019), classroom climate (i.e., perceptions of different aspects of the school experience in terms of academic, community, safety and structural features) (Kuyken et al., 2022; Monsillion et al., 2023), nonviolence and pro-environmental attitudes (Aspy & Proeve, 2017; Jalón et al., 2020; Sajjad & Shahbaz, 2020), and even bullying (Georgiou et al., 2020; Malin & Gumpel, 2023). Nevertheless, it

needs to be noted that a notable body of research has found nonsignificant effects of mindfulness- and compassion-based programs when applied on children and adolescents (Dunning et al., 2022). Different reasons might be behind this variety of findings (e.g., intervention format, sample's age, dose of the intervention) (Hay Ming Lo, 2024), and it is considered relevant to conduct new studies with active control groups, so clear conclusions regarding the effects of these interventions on adolescents' mental health can be stablished (Dunning et al., 2022; Galante et al., 2021; Jalón et al., 2020; Ruiz-Íñiguez et al., 2020; van Loon et al., 2020; Zenner et al., 2014).

The present study tested the efficacy of a school-based mindfulness and compassion program to reduce psychological distress and promote other mental health-related outcomes in a relatively large sample of Spanish adolescents, compared to an active control condition (a relaxation program), both in the short and the medium term (i.e., 6 months after completing the program). This program is theoretically framed within the "*Escuelas Despiertas*" initiative—which can be translated as "Awake Schools". It was originally conceived as a whole-school mindfulness and compassion-based project, inspired by the teachings of Zen Master Thich Nhat Hanh and the Plum Village community (Nhat Hanh & Weare, 2017), whose effects and implementation have not yet been explored in the scientific literature. The initiative aims to prevent and treat psychological distress, promote psychological well-being, relaxation, and a compassionate school environment for the whole community (Aguilera, 2017; 2023). In this study, we focused on students by providing a 10-session adaptation of the "*Escuelas Despiertas*" program, offered to year 9 and 10 (secondary school) students. This adaptation considers the "window of opportunity" that some authors have identified at

these ages for developing mindfulness, due to heightened brain plasticity, self-reflection, and interest in understanding the self and others (Roeser & Pinela, 2014).

2. Method

2.1 Participants

This randomized controlled trial included students from three secondary education centres in Barcelona (*BLINDED FOR REVIEW*) and one in Mallorca (*BLINDED FOR REVIEW*). At least 2 homerooms of each school were included, most of which were of year 9. Once the informed assent/consent had been signed by both the student and their legal guardian, each classroom was randomly assigned to one of the following study arms: (1) a 10-session mindfulness and compassion-based program framed into the "*Escuelas Despiertas"* initiative or (2) an active control group based on a relaxation program. The only exclusion criteria for participating in the study was having received mindfulness training previously, but that was not the case and thus, no one was excluded.

The sample size was calculated assuming a moderately small effect (d = 0.35) of the intervention vs. the relaxation program in the primary outcome, with a 0.05 two-sided alpha, 80% power, and equal 1:1 allocation rate. It was estimated at 250 students (125 per group); assuming an attrition rate of 10% at follow-up, the total sample size required was established at 278 students (around 139 per group).

2.2 Procedure and ethics

The present study was conducted during the 2021-22 academic course, which was still substantially marked by the COVID-19 pandemic (Panagouli et al., 2021; Pressley & Ha,

2021). The first author contacted teachers working in secondary education centres who had been involved in the "*Escuelas Despiertas"* initiative in the past and offered them the opportunity to take part in the present project, whose original idea was to train teachers in the contents of "*Escuelas Despiertas*" so they could implement it in their schools from a wide perspective, not just in specific sessions with their students. However, the restrictions associated to the pandemic made these training sessions not viable and, instead, the secondary education centres were offered the possibility of implementing during school time a 10-session face-to-face group program based on the contents of "*Escuelas Despiertas*" to their students. Four secondary education centres, three of which were public and one a partially state-funded school, showed interest and were committed to the study requirements. Both the students and their families or legal guardians were offered information about the study via letter along with the informed assent/consent; those who signed the documents were included in the study.

The baseline measures were assessed before randomization, which was conducted by a member of the research team who was not related to this project using Epidat 4.2. Following the methods used in previous randomized controlled trials implying teenagers (Johnstone et al., 2016), the study conditions remained blind for the participants, although the nature of the intervention was clear after some sessions. Both interventions were delivered in parallel in each high school; the homeroom teachers were responsible for the relaxation intervention, while professionals external to the secondary school delivered the "*Escuelas Despiertas*" program. After 10 weeks, the posttreatment assessment was conducted, and 6 months later, a follow-up assessment was performed.

Approval for this study was granted by the ethical committee of BLINDED FOR REVIEW. All activities conducted in the course of this study adhered to the guidelines outlined in the 1964 Declaration of Helsinki and its subsequent revisions. The data were handled with strict anonymity and utilized exclusively for the study's intended purposes. Participant confidentiality was ensured and safeguarded by compliance with the Spanish Organic Law on Protection of Personal Data and Guarantee of Digital Rights (3/2018 of December 7), as well as all pertinent EU regulations pertaining to privacy and data protection.

2.3 Interventions

Based on the "*Escuelas Despiertas*" conceptual framework (Aguilera, 2017; 2023) and considering the abovementioned conditions and limitations associated with the COVID-19 pandemic, a school-based intervention of 10 sessions for adolescents was designed to be implemented in high schools with students of year 9 and 10. The program was implemented during school time, each weekly session lasted around 45 minutes and all sessions were conducted by professionals who were certified in the "*Escuelas Despiertas*" original program and with years of experience. The intervention was designed according to six interrelated dimensions of mindful life emphasizing physical, cognitive, emotional, social, environmental, and global aspects. They focused on experiential exercises related to mindful attention and meditation practices, including breathing exercises; cognitive functioning, emotional regulation, and the cultivation of compassionate feelings; conflict-resolution techniques; and ecological attitudes for living together in an interconnected world. During the sessions, students were encouraged to practice what they learned both in the classroom and at home each week; however, this study did not track their adherence to the practice.

More details on the "*Escuelas Despiertas*" initiative and the intervention can be found in Aguilera (2023).

The control group underwent a 10-week program, also delivered during school time. This program included five sections distributed as follows: (1) three sessions of progressive muscle relaxation, (2) one session of self-massage, (3) one session of breathing relaxation, (4) three sessions of visualizations, and (5) two sessions of review of what had been learned. The techniques did not overlap with the "*Escuelas Despiertas*" intervention since mindfulness and compassion trainings were not included at any point. Additionally, the breathing exercises in this intervention differed in nature from those in the "*Escuelas Despiertas*" program, where breathing was used to anchor attention in the present moment rather than being regulated to induce calm. A similar active control condition has been used in other recent studies with young people and adolescents (Delgado-Suárez et al., 2021; Modrego-Alarcón et al., 2021). Sessions lasted around 45 minutes and were conducted by the homeroom teacher. Each section included a theoretical introduction followed by exercises that the students practiced during the sessions.

2.4 Measures

The *General Health Questionnaire-12* (GHQ-12; Goldberg and Williams, 1988) was considered the primary outcome for this study. This questionnaire measures overall psychological distress and non-psychotic psychiatric problems (e.g., "Have you recently been feeling unhappy or depressed?", "Have you recently been feeling nervous and strung up all the time?"). Its score ranges between 0 and 36, with higher scores indicating more severe levels of distress. The psychometric properties of the original and the Spanish

adaptation of the GHQ-12 are good (Sánchez-López & Dresch, 2008); in our study the internal consistency was good in all the assessment points ($\alpha_{T0} = 0.86$; $\alpha_{T1} = 0.86$; $\alpha_{T2} = 0.85$).

As secondary outcomes, we included the *Mindful Attention Awareness Scale* (MAAS; Brown and Ryan, 2003), the *Self-Compassion Scale-short form* (SCS-SF; Raes et al., 2011), the *Satisfaction With Life Scale* (SWLS; Diener et al., 1985), the *Brief Scale of Classroom Climate* (BSCC; López González and Bisquerra Alzina, 2013), the *School Relaxation Habits Brief Questionnaire* (SRHBQ; López-González et al., 2016), the *European Bullying Intervention Project Questionnaire* (EBIPQ; Brighi et al., 2012), and the *New Ecological Paradigm Scale* for children (NEP; Manoli et al., 2007). The Spanish adaptation of each questionnaire was used for the present study. In our sample, the internal consistency of the measures was good or excellent in most cases (MAAS: $\alpha_{T0} = 0.81$, $\alpha_{T1} = 0.88$, $\alpha_{T2} = 0.87$; SWLS: $\alpha_{T1} = 0.80$, $\alpha_{T2} = 0.83$; BSCC: $\alpha_{T0} = 0.81$, $\alpha_{T1} = 0.84$, $\alpha_{T2} = 0.85$; EBIPQ: $\alpha_{T0} = 0.87$, $\alpha_{T1} = 0.90$, $\alpha_{T2} = 0.91$), acceptable for some measures (SCS-SF: $\alpha_{T0} = 0.75$, $\alpha_{T1} = 0.79$, $\alpha_{T2} = 0.72$; SWLS: $\alpha_{T0} = 0.77$), and poor in the case of SRHBQ ($\alpha_{T0} = 0.50$, $\alpha_{T1} = 0.56$, $\alpha_{T2} = 0.58$) and NEP ($\alpha_{T0} = 0.58$, $\alpha_{T1} = 0.57$, $\alpha_{T2} = 0.59$).

2.5 Data analysis

At baseline, socio-demographic information was presented using frequencies (and percentages) or means (and standard deviations). To ensure that the socio-demographic characteristics were evenly distributed between the groups, a visual inspection and Chi-squared or Student's *t* tests were performed.

The primary analysis consisted of the evaluation of the effectiveness of the school-based "*Escuelas Despiertas*" program for reducing psychological distress compared to the

control group. The primary outcome was the GHQ-12, which was taken as a continuous outcome. A repeated measures design was implemented using multilevel mixed-effects linear regression models, which incorporated subjects and the classroom as random effects, with an intention to treat (ITT) basis. Sex, age, academic year, school, and the baseline score of the outcome were included as covariates. Following Egbewale et al. (2014), the restricted maximum likelihood estimation technique was used to produce unbiased estimates. The non-standardized slopes and 95% confidence intervals (CI) were computed, and the group × time interaction was examined to assess the distinct trajectories of each group during the interventions, and to determine if any between-group differences persisted during the follow-up period.

To determine the effectiveness regarding the secondary outcomes, the same analytical approach used for the primary analysis was followed. Within-group analyses were also conducted for both the primary and secondary outcomes. Cohen's *d* was utilized to evaluate the effect sizes, which were considered small if $d \leq 0.2$, medium if $d \geq 0.5$, and large if $d \geq 0.8$ (Cohen, 1988).

An alpha level of 0.05 was set, using a two-tailed test. Data analyses were computed using IBM SPSS v26.0 statistical software. The Benjamini-Hochberg method was used to calculate multiple testing adjusted *p*-values (Benjamini & Hochberg, 1995).

3. Results

3.1 Participant flow and compliance

A total of 277 students conformed the sample, of which 141 (50.9%) were assigned to the intervention group and 136 (49.1%) to the control group (see Figure 1). In the "*Escuelas Despiertas"* group, 133 students (94.3%) provided baseline data, 112 (79.4%) posttreatment data, and 113 (80.1%) follow-up data. The control group started with baseline data from 129 students (94.9%), and the retention rates were 88.9% (n = 121) post-test and 79.4% (n = 108) at follow-up, which did not represent significant differences between the study groups.

FIGURE 1

3.2 Baseline characteristics of the sample

A mean age of 14.29 years (SD = 0.55; range = 13-16) was observed in the total sample, with a higher proportion of males (n = 159, 57.8%). Most students were in year 9 (n = 238, 85.6%), and the rest were year 10 students. No significant differences between the study arms were observed in any sociodemographic variable. The baseline levels of the primary and secondary outcomes were similar in both study arms in all cases but one: the score on the NEP scale was significantly higher in the intervention group (p = .045), although this effect was lost after applying the Benjamini-Hochberg correction.

TABLE 1

3.3 Effects on the primary outcome

The within group analyses (see Table 2) indicated that the "*Escuelas Despiertas*" program produced a significant effect on the primary outcome (GHQ-12) posttreatment (t = 3.47, p = .001) of small effect size (d = 0.31). This effect was maintained in the 6-month follow-up (t = 2.07, p = .041, d = .20), although, in this case, it was no longer significant after

applying the Benjamini-Hochberg correction. The control group, on the other hand, did not experience any significant within group change in the GHQ-12. Nevertheless, the between group comparison indicated that there were no significant differences between both study arms regarding the primary outcome at any time point (see Table 3).

TABLE 2

3.4 Effects on the secondary outcomes

In line with the primary outcome, the within group analyses (see Table 2) showed that the "*Escuelas Despiertas"* intervention had a significant effect increasing relaxation habits (SRHBQ) in the posttreatment assessment (t = -3.56, p = .001, d = 0.35) which was maintained in the follow-up assessment (t = -2.19, p = .031, d = 0.23), although this latter effect was no longer significant after correcting for multiple testing. Classroom climate, measured by the BSCC, experienced a significant worsening both posttreatment (t = 2.61, p = .010, d = 0.19) and in the follow-up assessment (t = 3.95, p < .001, d = 0.36), although the first was not significant after applying the Benjamini-Hochberg correction. The remaining study outcomes did not show any significant changes.

The control group, on its part, also showed a significant improvement in relaxation habits (SRHBQ) both posttreatment (t = -4.27, p <.001, d = 0.40) and in the follow-up assessment (t = -2.97, p = .004, d = 0.34). This group experienced a significant decrease in mindfulness levels (MAAS) in the follow-up (t = 3.62, p <.001, d = 0.34). These effects remained significant after applying the Benjamini-Hochberg correction. The rest of secondary outcomes did not show any significant changes.

The between group analyses only reflected a significant difference between the two study arms in the BSCC in the follow-up assessment ($t = 2.22$, $p = .027$) favoring the control group, although this effect presented a small size ($d = 0.14$) and was no longer significant after applying the correction for multiple testing (see Table 3).

TABLE 3

4. Discussion

The school-based "*Escuelas Despiertas*" program reduced psychological distress among teenagers in the posttreatment assessment, although this effect was small and not significantly different than the one achieved by the relaxation program, and was not maintained after 6 months. This finding goes in line with the recent meta-analysis conducted by Dunning et al. (2022), which presented inconclusive evidence regarding the effects of mindfulness-based programs on teenagers' mental health, with generally small effects in the short term and no significant results in follow-up assessments.

Moreover, and contrary to what could have been expected (Lucas-Thompson et al., 2020), mindfulness and self-compassion levels were not significantly affected by the intervention, while the control group experienced a significant reduction in mindfulness levels in the 6-month follow-up assessment, although the between group comparison was not significant. Interestingly, some previous studies have already found that mindfulness-based interventions did not improve mindfulness in teenagers more than active control conditions (Dunning et al., 2022; Huppert & Johnson, 2010; Montero-Marin et al., 2022, 2023; Rawlett et al., 2019; Schonert-Reichl & Lawlor, 2010; Tharaldsen, 2012). Regarding self-compassion, some previous studies observed significant improvements after undergoing

similar interventions (Bluth, Gaylord, et al., 2016; Bluth, Roberson, et al., 2016; Delgado-Suárez et al., 2021), but the meta-analysis conducted by Wilson et al. (2019) reported that compassion-based programs do not impact self-compassion more than other interventions. While adolescence has generally been considered a "window of opportunity" to learn and develop new skills, it has been recently suggested that adolescents may not have developed yet the metacognitive skills required to fully integrate mindfulness skills and attitudes (Delgado-Suárez et al., 2021; Montero-Marin et al., 2022), which would, in turn, hinder that these skills and attitudes are applied to improve mental health.

On the other hand, and again contrary to the expectations, classroom climate showed a deterioration in the intervention group which was significant compared to the control group in the follow-up assessment. Having in mind that this was a small effect that resulted not significant after applying the multiple test correction, different reasons could be behind it: first, it needs to be noted that relaxation sessions were delivered by the students' homeroom teacher while the sessions of the "*Escuelas Despiertas*" program were conducted by a different professional. It seems reasonable to affirm that the adolescents' perception of classroom climate would be more likely to remain stable when their homeroom teacher oversaw the sessions rather than when it was another person. In addition, the measure we used (BSCC), despite presenting good internal consistency, has shown low test-retest reliability (r = 0.43; López González & Bisquerra Alzina, 2013). This might suggest that students could answer some of its items considering recent specific events instead of an overall view of the classroom climate (e.g., the response to item 10: "students help each other" could be affected by the existence of recent classroom conflicts). However, although these explanations provide a plausible account for the observed deterioration in classroom

climate, it is important to acknowledge that this remains speculative without further empirical validation. Future studies should investigate the potential impact of facilitator familiarity to better understand how it may influence students' perceptions of classroom climate in similar interventions, and using alternative or complementary measures to evaluate this outcome (e.g., qualitative assessments) could be considered.

For what concerns to bullying, neither the "*Escuelas Despiertas*" program nor the relaxation intervention had any significant impact on the reported levels of victimization or aggression. Although some research has found significant associations between mindfulness and bullying (Georgiou et al., 2020; Malin & Gumpel, 2023), previous studies have reported no effects of mindfulness and compassion-based interventions on violence-related outcomes (Delgado-Suárez et al., 2021; Huppert & Johnson, 2010; Rawlett et al., 2019; Schonert-Reichl & Lawlor, 2010; Tharaldsen, 2012; Wongtongkam et al., 2015), while other types of intervention, which include parent meetings and improved playground supervision, have been more effective (Ttofi & Farrington, 2011). These findings suggest that mindfulness and compassion-based programs might not be the best approach for cultivating nonviolence among adolescents, while this constitutes an extremely difficult challenge that requires the implication of students' families, educators, and the community.

The "*Escuelas Despiertas*" program did improve relaxation habits posttreatment, although, as in the case of psychological distress, the effect size was small and not significant compared to the control group, who also improved their relaxation habits both in the posttreatment and the 6-month follow-up assessments. Both programs included some breathing exercises which, despite being different in nature (i.e., breathing regulation to induce calm vs. focusing on breath as an anchor to the present moment), could still produce

relaxation effects and therefore partly explain the absence of differences between the groups. However, the degree of differentiation between the programs was not empirically evaluated, which is a limitation of the study. On the other hand, satisfaction with life and pro-environmental attitudes did not show any significant changes at any assessment point. While there is evidence that practicing mindfulness is associated with a sense of connectedness to nature (Schutte & Malouff, 2018), which is in turn linked to civic responsibility and environmentally responsible behaviors (Aspy & Proeve, 2017; Sajjad & Shahbaz, 2020), in our study these were not appreciated. The absence of effects found in this sense could be explained by the probably low levels of adolescents' adherence to mindfulness practice, as reported in similar studies (Montero-Marin, Hinze, Crane, et al., 2023; Tudor et al., 2022).

In summary, the school-based "*Escuelas Despiertas*" program only achieved some small short-term effects that were not significant compared to the control group. These findings go in line with the results of the MYRIAD project, a recent trial which evaluated the effectiveness of a school-based, 10-session mindfulness training on a large sample of high school students in the United Kingdom (Kuyken et al., 2022); the authors concluded that the program was not effective for preventing mental health difficulties and improving well-being compared to social-emotional teaching-as-usual and even pointed out that receiving universal school-based mindfulness training could be contraindicated for those students with existing or emerging mental health difficulties (Montero-Marin et al., 2022). These findings lead to doubt that this format of mindfulness- and compassion-based interventions (i.e., 45-minute weekly sessions during approximately 2.5 months) can have a significant positive impact on adolescents' mental health. Alternative approaches, such as school-based programs with shorter but more frequent mindfulness practices, have presented positive results in previous

studies and could potentially represent a more adequate approach for this population (Jalón et al., 2020; Mettler et al., 2024). In addition, booster sessions could be considered to maintain the effects in the longer term (Kuyken et al., 2022). It has also been suggested that mindfulness programs in this age group should target points of clear need (e.g., exam stress), explicitly address motivation to practice, and use online modalities to increase engagement (Montero-Marin, Hinze, Crane, et al., 2023). Moreover, some authors consider that a more comprehensive and long-term approach can perhaps be more effective for helping teenagers with their mental health (Roeser et al., 2022; Weare, 2023); this approach should include the support of educational agents (e.g., counselors) who can identify cases that may require specific resources.

The "*Escuelas Despiertas*" initiative was originally developed as a wide program that involves students, teachers, and the community, not limited to a number of sessions to be delivered in school time in some consecutive weeks but integrated in the school culture (e.g., including mindfulness training as part of physical education) and the day-to-day of students through diverse activities such as breathing exercises to calm down or during transitional times (Bostic et al., 2015; Wilde et al., 2019). Through this comprehensive approach, the initiative was aimed at targeting not only individual factors, but also macro- (e.g. socio-economic inequalities) and meso-factors (e.g. peer relationships, school climate) that shape youngsters' mental health, with potential for moderating interventions' acceptability, effectiveness, and implementation (Kuyken et al., 2023). Although implementing and assessing the effects of such comprehensive programs is not exempt from difficulties, future studies should focus on them, as they might be more likely to produce meaningful effects on adolescents' well-being and mental health. Additionally, as abovementioned, future studies

need to consider the special needs of teenagers, who are often not motivated towards mindfulness and compassion training and sometimes lack of the abilities needed to apply these skills (Delgado-Suárez et al., 2021; Kuyken et al., 2022; Montero-Marin et al., 2022). Getting the adolescents involved in the design of the programs seems to be a good way of overcoming the motivation issues that frequently hinder adherence to the intervention, which might be key for achieving significant changes (Montero-Marin et al., 2022, 2023; Schonert-Reichl, 2023). Schools offer an ideal setting to promote well-being during adolescence as a key developmental window, but social inequalities might also present a challenge to designing school-based interventions, obscuring the achievement of positive results (Mansfield et al., 2023).

The findings of the present study need to be interpreted in light of some limitations; first, the sample does not fully represent the adolescent population, since despite the age range of the study participants was 13-16, most of them (70.2%) were aged 14; it is possible that the "*Escuelas Despiertas*" program could result more effective for older adolescents, as previous studies testing mindfulness-based interventions have suggested (Montero-Marin et al., 2022). The secondary education centers that participated in the study were not randomly selected, but rather contacted because of their previous interest in a similar project, and three of them were located in the same province, which also limits the external validity of our results. Future research should consider including older adolescents in their sample and, if possible, incorporate more schools from different geographic regions. On the other hand, self-reported measures were used to assess the study outcomes, which implies a certain bias, and some of the questionnaires (SHRBQ and NEP) presented poor internal consistency; this means that the results regarding these study outcomes must be interpreted with caution.

Future studies should consider shortening and/or simplifying the assessment plan to avoid response fatigue, which could be partially explaining the low Cronbach's alpha scores in the abovementioned scales. For what concerns to the implementation of the school-based "*Escuelas Despiertas*" program, it needs to be noted that aspects related to fidelity (e.g., adherence to program model, quality of delivery) were not assessed in the present study, and that most sessions ended up having around 40 minutes of effective time, which is a notably low weekly dose of intervention, and not all the sessions were delivered in consecutive weeks. This, in addition to the well-known obstacles and significant mental health decline among adolescents associated with the COVID-19 pandemic, which were present during the 2021-22 academic year (Montero-Marin, Hinze, Mansfield, et al., 2023; Panagouli et al., 2021; Pressley & Ha, 2021), probably hindered—at least in part—the program's effectiveness. Future studies should also include some type of autonomous practice monitoring to evaluate the degree of adherence to the program.

In conclusion, our findings indicate that the 10-session "*Escuelas Despiertas*" program produced small short-term improvements in psychological distress and relaxation habits in adolescents, although these were not significant compared to a relaxation intervention. "*Escuelas Despiertas*" was originally conceived as an organic program involving both students and educators, focused on promoting mindfulness and compassion skills in different moments and spaces within the school. The COVID-19 pandemic forced the authors to adapt "*Escuelas Despiertas*" into a 10-session intervention focused on students only, a format that has generally faced difficulties in achieving meaningful changes within the adolescent population (Dunning et al., 2022). However, it is important to recognize that many factors might influence these outcomes (e.g., participants' age, intervention dose, autonomous

practice) (Tudor et al., 2022). Therefore, our findings underscore the need for further research to explore how to enhance the effectiveness of mindfulness- and compassion-based interventions for this demographic.

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TABLES

Table 1. Sociodemographic and baseline characteristics of the sample.

	Intervention group (n = 141)	**Control group (n = 136)**	**t or χ^2 (p value)**
Demographics			
Gender, n. of females (%)	59 (42.1%)	56 (41.8%)	0.00 (.953)
Age, *M* (*SD*)	14.25 (0.53)	14.34 (0.57)	-1.29 (.198)
Academic year, n. of 3rd year-secondary school (%)	121 (85.8%)	116 (85.3%)	0.02 (.902)
Study variables			
GHQ-12, *M* (*SD*)	26.27 (6.98)	25.75 (6.40)	0.63 (.532)
MAAS, *M* (*SD*)	3.88 (0.79)	4.00 (0.85)	-1.17 (.245)
SCS-SF, *M* (*SD*)	2.95 (0.68)	2.84 (0.65)	1.41 (.159)
SWLS, *M* (*SD*)	16.12 (4.24)	15.79 (3.98)	0.65 (.518)
BSCC, *M* (*SD*)	30.51 (5.68)	29.79 (4.84)	1.10 (.271)
SRHBQ, *M* (*SD*)	2.06 (0.34)	2.07 (0.34)	-0.13 (.897)
EBIPQ, *M* (*SD*)			
Victimization	1.77 (0.78)	1.78 (0.76)	-0.15 (.884)
Aggression	1.39 (0.55)	1.40 (0.52)	-0.15 (.879)
NEP, *M* (*SD*)	3.44 (0.41)	3.32 (0.50)	2.01 (.045) ǂ

Note: ǂ means that the difference was no longer significant after applying the Benjamini-Hochberg correction test.

Table 2. Raw scores and intragroup differences per group.

	Baseline *M* (*SD*)	Post-test *M* (*SD*)	Follow-up *M* (*SD*)	Baseline vs. Post-test		Baseline vs. Follow-up	
				***t* (*p*)**	**d**	***t* (*p*)**	**d**
Intervention group	**n = 133**	**n = 112**	**n = 113**				
GHQ-12 [0-36]	26.27 (6.98)	24.34 (6.21)	24.58 (6.36)	**3.47 (.001)**	**0.31**	2.07 (.041) ǂ	0.20
MAAS [1-6]	3.88 (0.79)	3.82 (0.91)	3.79 (0.86)	0.91 (.365)	0.08	0.75 (.454)	0.09
SCS-SF [1-5]	2.95 (0.68)	2.88 (0.66)	2.90 (0.59)	0.59 (.556)	0.04	1.12 (.265)	0.10
SWLS [0-25]	16.12 (4.24)	16.47 (4.24)	16.12 (4.35)	-1.08 (.283)	0.08	0.79 (.433)	0.07
BSCC [11-44]	30.51 (5.68)	29.43 (5.42)	28.50 (6.19)	2.61 (.010) ǂ	0.19	**3.95 (<.001)**	**0.36**
SRHBQ [0-3]	2.06 (0.34)	2.16 (0.31)	2.12 (0.39)	**-3.56 (.001)**	**0.35**	-2.19 (.031) ǂ	0.23
EBIPQ [0-4]							
Victimization	1.77 (0.78)	1.76 (0.70)	1.75 (0.76)	0.93 (.356)	0.07	0.20 (.842)	0.02
Aggression	1.39 (0.55)	1.40 (0.56)	1.41 (0.63)	0.63 (.531)	0.05	0.03 (.979)	0.00
NEP [1-5]	3.44 (0.41)	3.42 (0.47)	3.40 (0.49)	0.43 (.668)	0.05	0.25 (.801)	0.01
Control group	**n = 136**	**n = 115**	**n = 102**				
GHQ-12 [0-36]	25.75 (6.40)	25.28 (6.44)	24.87 (6.12)	1.21 (.228)	0.12	1.59 (.115)	0.17
MAAS [1-6]	4.00 (0.85)	3.89 (0.89)	3.78 (0.91)	1.39 (.167)	0.10	**3.62 (<.001)**	**0.34**
SCS-SF [1-5]	2.84 (0.65)	2.88 (0.68)	2.88 (0.60)	-0.80 (.427)	0.06	-0.81 (.422)	0.08
SWLS [0-25]	15.79 (3.98)	15.82 (4.00)	16.32 (4.57)	-0.77 (.446)	0.08	-1.78 (.078)	0.18
BSCC [11-44]	29.79 (4.84)	29.16 (5.85)	29.31 (5.46)	1.47 (.146)	0.12	1.02 (.312)	0.11

SRHBQ [0-3]	2.07 (0.34)	2.25 (0.49)	2.19 (0.36)	**-4.27 (<.001)**	**0.40**	**-2.97 (.004)**	**0.34**
EBIPQ [0-4]							
Victimization	1.78 (0.76)	1.88 (0.85)	1.79 (0.87)	-0.96 (.341)	0.08	-0.06 (.949)	0.01
Aggression	1.40 (0.52)	1.52 (0.75)	1.44 (0.70)	-1.69 (.093)	0.15	-1.13 (.260)	0.12
NEP [1-5]	3.32 (0.50)	3.37 (0.48)	3.36 (0.48)	-0.84 (.402)	0.09	-1.20 (.232)	0.16

Note: Significant effects are presented in bold. ǂ means that the result is no longer significant after applying the Benjamini-Hochberg correction test.

Table 3. Between-group analyses for primary and secondary outcomes (ITT approach).

Outcomes	Intervention group	Control group	Intervention vs control group		
			d	*t* (*p*)	*B* (95% CI)
Primary	*M* (*SD*)	*M* (*SD*)			
GHQ-12 [0–36]					
Baseline	26.18 (6.45)	25.90 (6.44)			
Post-treatment	24.24 (6.27)	25.29 (6.38)	0.17	1.68 (.094)	1.36 (-0.23 to 2.96)
Follow-up	24.81 (5.94)	24.88 (6.29)	0.01	0.53 (.596)	0.44 (-1.19 to 2.08)
Secondary	*M* (*SD*)	*M* (*SD*)			
MAAS [1–6]					
Baseline	3.87 (0.86)	3.98 (0.86)			
Post-treatment	3.79 (0.83)	3.88 (0.85)	0.11	-0.25 (.804)	-0.03 (-0.24 to 0.18)
Follow-up	3.79 (0.84)	3.77 (0.84)	0.03	-1.87 (.062)	-0.20 (-0.42 to 0.01)
SCS-SF [1–5]					
Baseline	2.95 (0.65)	2.82 (0.64)			
Post-treatment	2.91 (0.60)	2.87 (0.63)	0.07	1.00 (.319)	0.07 (-0.07 to 0.21)
Follow-up	2.87 (0.62)	2.88 (0.61)	0.01	1.48 (.140)	0.11 (-0.04 to 0.25)
SWLS [0–25]					
Baseline	16.15 (4.21)	15.73 (4.20)			
Post-treatment	16.49 (4.05)	15.92 (4.15)	0.14	-0.29 (.770)	-0.15 (-1.18 to 0.87)
Follow-up	15.90 (4.07)	16.39 (4.06)	0.12	1.58 (.114)	0.85 (-0.20 to 1.89)
BSCC [11–44]					
Baseline	30.50 (5.54)	29.77 (5.52)			
Post-treatment	29.36 (5.31)	29.16 (5.45)	0.04	0.61**b** (.544)	0.41 (-0.91 to 1.73)
Follow-up	28.47 (5.37)	29.20 (5.36)	0.14	2.22 (.027) ǂ	1.53 (0.18 to 2.88)
SRHBQ [0–3]					
Baseline	2.06 (0.38)	2.07 (0.37)			
Post-treatment	2.17 (0.37)	2.25 (0.37)	0.20	1.06 (.291)	0.06 (-0.05 to 0.16)
Follow-up	2.13 (0.37)	2.18 (0.37)	0.13	0.82 (.412)	0.04 (-0.06 to 0.15)
EBIPQ Victim [0–4]					
Baseline	1.77 (0.78)	1.80 (0.78)			
Post-treatment	1.74 (0.75)	1.88 (0.77)	0.18	1.11 (.269)	0.11 (-0.08 to 0.30)
Follow-up	1.75 (0.77)	1.81 (0.76)	0.07	0.27 (.855)	0.02 (-0.18 to 0.30)
EBIPQ Aggressor [0–4]					
Baseline	1.40 (0.61)	1.40 (0.61)			
Post-treatment	1.39 (0.59)	1.50 (0.61)	0.20	1.39 (.166)	0.11 (-0.05 to 0.26)
Follow-up	1.42 (0.60)	1.47 (0.60)	0.09	0.84 (.400)	0.07 (-0.09 to 0.22)
NEP [1–5]					
Baseline	3.43 (0.47)	3.23 (0.48)			
Post-treatment	3.40 (0.47)	3.37 (0.47)	0.08	0.86 (.389)	0.06 (-0.08 to 0.20)
Follow-up	3.40 (0.47)	3.37 (0.47)	0.06	1.06 (.291)	0.08 (-0.07 to 0.22)

Note: All the analyses are performed including the following covariates: sex, age, academic year, school, and the baseline score of the variable. ǂ means that the effect resulted not statistically significant after applying the Benjamini-Hochberg correction test.