



The Kids aren't Alright: A Brief Positive Psychological Intervention During the COVID-19 Pandemic in a Spanish Sample of Adolescents

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Accepted: 23 September 2023 / Published online: 13 October 2023
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Abstract

Previous studies have reported that adolescents were at higher risk for mental health disorders during and after the COVID-19 pandemic due to the characteristics of their developmental period and to the impact of social and mobility restrictions on their daily routines. In response to these reports, we designed, implemented, and evaluated the impact of a brief positive psychological intervention in a high school setting to increase adolescents' psychological well-being during the COVID-19 pandemic. A pre-post experimental study was conducted to compare the levels of anxiety, academic motivation, and performance changes in an experimental and control group. A final sample of 148 students from two Spanish high schools of the Catalan region participated in the study ($M_{age} = 12.45$; 48% female). Results showed that participants in the experimental group reported a reduction in anxiety and an increase in global motivation levels compared to the control group. Regression analyses also revealed that the intervention was a significant predictor of reduced anxiety, increased motivation, and fewer failed subjects, while high anxiety predicted decreased performance and reduced motivation. These findings suggest that brief positive psychological interventions implemented in high school classrooms could be a cost-effective and systemic preventive measure for increasing adolescents' psychological well-being and strengthening their general mental health both during and after periods of pandemic restrictions.

Keywords Positive psychology · Well-being · Adolescence · Prevention

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COVID-19 was declared a global pandemic by the World Health Organization (WHO) in March 2020. With over 375 million cases and 5.68 million deaths worldwide, it is regarded as one of the deadliest pandemics in history (Kontis et al., 2020; WHO, 2022). Governments worldwide implemented various non-pharmacological measures, including social distancing, self-isolation, and mobility restrictions, while some countries implemented complete lockdowns and quarantines that lasted for months. Spain was among the most affected countries in the European Union, with reports showing a significant increase in mental health problems, especially among women and younger members of the population (Loades et al., 2020; Muro et al., 2021; Pizarro-Ruiz & Ordóñez-Cambor, 2021; Sanabria-Mazo et al., 2021). Social isolation, disruption in daily routines, concern for one's and others' health, and uncertainty were considered factors that caused generalized anxiety and increased depressive symptoms, especially in younger people given the developmental needs of this age period (Courtney et al., 2020; Galea et al., 2020; Luijten et

al., 2021; Ravens-Sieberer et al., 2021). Children and adolescents exposed to disasters are considered to be at higher risk because of their heightened vulnerability, and they need special attention compared to adults during global crises and catastrophes (Peek et al., 2018). One meta-analysis of almost 23,000 children and adolescents from 11 countries found that the prevalence of depression and anxiety after the pandemic was 34.5% and 41.7%, respectively (Panda et al., 2021). Countries that implemented full lockdowns, like China, reported a higher prevalence of anxiety (37%) and depression (44%) among children and adolescents, while in countries with partial lockdowns, such as the Netherlands, the prevalence was lower (Luijten et al., 2021; Zhou et al., 2020). In Spain, a higher prevalence of emotional problems was observed in older children, late adolescents (18–21), and some studies reported around 50% of psychological distress among university students (Amorós-Reche et al., 2022; Jiménez-Villamizar et al., 2023). Accordingly, the number of adolescents treated in mental health clinics in Spanish metropolitan areas (such as the surrounding regions of Barcelona) increased by 47% during the first quarter of 2021 compared to the same period in 2020 (Sant Joan de Déu Hospital, 2021).

Anxiety, Motivation, and Performance During the COVID-19 Pandemic

Increased anxiety was one of the most frequently reported correlates among the youngest populations during the pandemic (Panda et al., 2021). Anxiety is a highly influential affective factor in mental health and has also been consistently described as one of the most significant predictors of academic failure (Ahmetović et al., 2020). It is a dynamic variable that induces feelings of worry, fear, and negative emotions such as guilt, overthinking, and doubts about one's skills, efficacy, and performance. The experience of anxiety also intensifies when individuals confront adverse situations and threats to their self-esteem and also depends on their basal personality levels and individual disposition (Spielberger et al., 1983; Zuckerman, 2005).

Another crucial factor related to academic performance is motivation (Deci & Ryan, 1985, 2000), which fulfills students' basic needs for well-being, autonomy, competence and relatedness, and enhances their achievement of academic goals (Ahmetović et al., 2020). There are two main types of motivation: extrinsic motivation underlies the activities carried out to obtain an external reward or avoid punishment, while intrinsic motivation drives engagement in an activity for its own sake, for gaining pleasure and satisfaction from performing a task. Intrinsic motivation exists when an individual is driven by satisfying internal rewards

rather than relying on external pressures or rewards. This form of motivation has been associated with increased subjective well-being, decreased anxiety, and better academic performance (Balogun et al., 2017; Ahmetović et al., 2020).

Academic performance posed a significant challenge for students as national school closures were implemented, impacting approximately 91.3% of the student population, which corresponds to more than 1.5 billion students (UNESCO, 2021). Courses moved from in-person learning to online learning, predominantly using information and communication technology (ICT). The rapid transition to remote work and online learning posed numerous challenges for the education sector. Obstacles such as difficulties in accessing online platforms and the constant exposure to COVID-19-related news and media coverage contributed to increased anxiety among students and had a detrimental impact on their learning process, motivation, and academic performance (Rahiem, 2021). Performance is a significant concern for educators, students, and their families, as underperformance can lead to increased anxiety, decreased academic motivation, and lower chances of successful integration into societal work structures (Muro et al., 2018). It is worth noting that poor academic achievement has been identified as the most significant predictor of educational failure and an indicator of psychosocial or mental health problems such as learning disorders, academic burnout, substance use, and higher dropout rates at an earlier age (Muro, 2015).

Accordingly, these three variables—anxiety, motivation, and performance—are closely interconnected and play a central role in adolescents' well-being and mental health (Balogun et al., 2017; Fatih & Dadandi, 2020; Tang & He, 2023; Vitasari et al., 2010a, 2010b). Therefore, the fear and disruption caused by lockdowns in school routines during the COVID-19 pandemic posed a threat to students' distress, academic motivation, and performance. Given the developmental needs of adolescents and the cumulative effects of such anxiety-inducing events, it was recommended to implement prevention programs in schools as a means of supporting public health services and addressing mental health concerns during the pandemic lockdowns among adolescents (Galea et al., 2020; Ravens-Sieberer et al., 2021).

School-Based Interventions for Promoting Adolescents' Mental Health

It is well known that school, as a community, is an essential systemic setting for children's personal development and, as such, plays a critical role in determining social, emotional, and behavioral outcomes (Fazel et al., 2014).

It also provides the ‘socializing context’ to learn a range of life and academic-related skills (Goldberg et al., 2019). Several pre-pandemic studies targeting the adolescent population revealed that interventions delivered in high school settings had beneficial effects on adolescents’ mental health (Boniwell & Ryan, 2012; Platt et al., 2020). For instance, positive psychology interventions (PPIs) implemented in schools have shown to be effective in enhancing psychological well-being, academic motivation, and performance (Boniwell et al., 2016; Shankland & Rosset, 2017). PPIs are psychological interventions that cultivate positive feelings, cognitions, and behaviors, while promoting positive human functioning and well-being on multiple levels including the personal, social, cultural, and global aspects of life (Bolier et al., 2013; Seligman & Csikszentmihalyi, 2000; Sin & Lyubomirsky, 2009; Vázquez & Hervás, 2008). The specific implementation of PPIs in educational settings is referred to as positive education (Seligman et al., 2009). Positive education focuses on teaching well-being skills and aims to enhance the cognitive, emotional, and behavioral strengths of both students and teachers to improve their performance and motivation. Additionally, positive education strives to create healthier and more positive school environments that support the holistic development of adolescents (Argüís-Rey, 2021; Boniwell & Ryan, 2012; Lombas et al., 2019).

A review conducted by Shankland and Rosset (2017) showed that implementing brief PPIs (i.e., five or less sessions) in schools can successfully produce a wide range of benefits, such as decreases in disruptive behaviors, depression, and anxiety symptoms and increases in school motivation, positive emotions, and well-being. Compared to single-component PPIs targeted at improving only one aspect of well-being (e.g., gratitude), multicomponent PPIs (MPPIs) include a variety of exercises targeting two or more theoretically relevant well-being components (e.g., character strengths, gratitude, self-esteem and optimism). A recent meta-analysis conducted by Tejada-Gallardo et al. (2020) demonstrated that school-based MPPIs have a significant impact on adolescents’ well-being and psychological distress both in the short and long term. Furthermore, research has shown that increasing levels of well-being during adolescence are associated with a reduction in psychological distress (Tejada-Gallardo et al., 2022). For this reason, targeting multiple domains of positive functioning from high-schools through MPPIs is a promising pathway for increasing well-being and reducing teenagers’ psychological distress and future mental health risks (Tejada-Gallardo et al., 2020, 2022).

The Present Study

The COVID-19 pandemic has presented unprecedented challenges, and a limited amount of research has explored the implementation and effectiveness of positive education programs in promoting adolescents’ mental health during global crises. To address this gap, the current study aimed to examine the effectiveness of a brief MPPI (five sessions targeting several well-being components) delivered in four first-year high school groups to enhance mental health amidst the pandemic. The stressful situation caused by the pandemic, including confinement measures and disruptions in academic routines, has exacerbated anxiety levels in adolescents, thereby increasing their risk of decreased academic motivation and performance (Barbosa-Camacho et al., 2022; Cassady & Johnson, 2002; Fatih & Dadandi, 2020; Golberstein et al., 2020; Hossain et al., 2021; Spielberger, 2019). Therefore, based on prior research conducted by other authors using similar interventions (Muro et al., 2018; Tejada-Gallardo et al., 2022), we hypothesized that participation in the brief MPPI during the pandemic would (H1) decrease adolescents’ anxiety levels, (H2) increase academic motivation, and (H3) enhance academic performance. Finally, we also hypothesized that (H4) higher anxiety would be associated with lower levels of performance.

Method

Procedure

The sample of schools for this study was recruited using cluster sampling. The inclusion criteria for clusters were that they had to be public high schools of the Barcelona metropolitan area, teaching secondary education levels (12 to 19 years old) and with similar socio-economic status (lower-middle socio-economic status, i.e., having an income below 20% of the average Spanish income). Public high schools are subsidized by the state with public funds and account for 55% of the total number of schools in Barcelona area (Barcelona Education Consortium, 2022). They reflect the wide diversity of the Spanish citizenry, include local students of all social classes and also immigrants, a phenomenon that cannot be observed in private schools, since they are financed with tuition fees and by students’ families, and low- and middle-income families or immigrant students are not adequately represented. The percentage of adolescent immigrants has significantly increased during the last decade in Barcelona area, and they represent between 18 and 26% of the total students (IDESCAT, 2022). Therefore, public high schools are more representative of the sociodemographic diversity of Spanish society and its adolescents.

In total, 37 high schools were initially selected based on these criteria. In February 2021, we randomly contacted ten schools that met these inclusion criteria, but only five responded to the call, and finally two agreed to participate in the study. The main reason for non-participation at that time was related to the COVID-19 restrictions, as the brief MPPI was originally designed to be implemented during synchronous face-to-face teaching. Since the program was not part of the high school's curriculum, the teaching team decided that the intervention needed to be scheduled during tutoring classes. During these hours, students typically engage in personal work, such as homework, and are not missing instruction in core subjects. The two final participating high schools were randomly assigned to either the intervention or control group and no incentives were offered to the participants. To ensure the effectiveness of the study, we agreed with the teaching teams of the two high schools to implement the intervention program with the youngest students (12 years old) who were in their first year of high school. This decision was based on evidence suggesting that this age group is particularly vulnerable to experiencing anxiety, especially given the challenges they may have faced during the COVID-19 pandemic (Luijten et al., 2021). As many of these students may have experienced prolonged periods of lockdown during their final year of primary school, transitioning to high school may have represented an additional source of stress and anxiety (Golberstein et al., 2020).

Participants

To establish an adequate sample size for the study, a power analysis calculation was conducted using the Stata program. The calculation was based on detecting a large effect size ($f=0.40$; Cohen, 1988) with a 0.01 significance level and a power of 0.95. With the objective of obtaining a final sampling error of 7%, under the assumption of maximum indeterminacy and a confidence level of 95.5% ($p=q=0.5$ and 2 sigma), and considering the loss of participants that could occur, we estimated an initial sample size of 200 participants (sampling error of 2.48%). With the final sample of 148 subjects, the sampling error was 8.22%. Thus, the final study sample consisted of 148 students between the ages of 12 and 13 ($M_{age} = 12.45$; 48% female). The intervention school group comprised four different classes, with approximately 23 students in each class, totaling 94 students, while the control school group was made up of two classes, with 27 students in each class, totaling 54 students. The schools had a similar distribution of participants, with around 18–26% having immigrant parents and 25–30% belonging to different ethnicities (mainly from North Africa, South America and Romany). Data for the pre-test was collected online using Google Forms® prior to the intervention in April

2021, while post-test data was collected at the conclusion of the intervention in June 2021. The researcher responsible for leading the intervention visited the schools to administer the survey and address any questions raised by the students during the process. The study protocol was approved by the university Ethics Committee and the management team of the high schools. Informed consent was obtained from the parents or legal guardians of the adolescents, and all students recruited for the study returned the consent forms to participate in the research.

Measures

Anxiety

To assess anxiety, we used the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983) in its Spanish adaptation (Buela-Casal et al., 2015), which is a commonly used, valid, and reliable measure (Cronbach's α from 0.87 to 0.93; Guillén-Riquelme & Buela-Casal, 2014). In the present research, we only administered the 20-item state anxiety (STAI-S) subscale to assess the temporary levels of anxiety, and not the stable-personality trait. Items are rated on a 4-point scale ("0 = Almost Never" to "3 = Almost Always"), with higher scores indicating greater state anxiety. The reliability of STAI-S for the present sample was evidenced by a Cronbach's α of 0.81 in the pre-test and 0.87 in the post-test.

Motivation

To assess motivation, the Scale of Motivational Assessment of the Learning Process [Cuestionario de Evaluación Motivacional del Proceso de Aprendizaje] (EMPA; Quevedo-Blasco et al., 2016) was used. This scale measures academic motivation, a cognitive variable of central importance for student development since it is part of the learning process. This instrument provides information using 33 items with Likert-type responses. It includes two subscales that measure extrinsic motivation (Cronbach's $\alpha=0.80$ in the pre-test and 0.83 in the post-test), intrinsic motivation (Cronbach's $\alpha=.91$ in the pre-test and 0.93 in the post-test), and also provides a global motivation score (Cronbach's $\alpha=0.92$ in the pre-test and 0.91 in the post-test).

Academic Performance

Baseline measures of academic attainment included two variables for each participant: (1) overall average grade and (2) the number of failed subjects (e.g., mathematics). These two performance indicators were obtained from each students' academic record of the second (April 2021) and third

trimester (June 2021), which were the academic records just before and after the intervention.

The Brief MPPI Program

In this study, we implemented a brief MPPI that was adapted from a previous program developed by Muro et al. (2018) to improve adolescents' school performance and motivation. It was based on positive psychology principles, including different components and activities that are present in general MPPIs. The sessions and activities included in this previous MPPI can be implemented either individually or in groups. However, most studies on MPPIs in adolescents indicate that they are typically implemented in group settings (Shankland & Rosset, 2017; Tejada-Gallardo et al., 2020). Therefore, the adaptation required for the original intervention was (a) the group format: individual intervention / classroom group intervention, (b) the reduced number of sessions: from 8 to 5, and (c) the language, as it was originally developed in Catalan and it needed to be adapted to Spanish in case some students could not understand the co-official language of Catalonia (a Mediterranean region located in the northeast of Spain).

Sessions

The final MPPI consisted of five sessions of one-hour each to be delivered collectively during tutoring classes by a final-year undergraduate psychology student who was doing a final-degree research project on Positive Psychology applied in Educational settings. This student was trained by a member of our research team—a psychologist specialized in applied positive psychology and adolescence. All materials, slides and booklets were provided to facilitate the implementation of the group intervention.

The five sessions covered the following areas: (1) setting academic goals (Deci & Ryan, 1985; Sheldon, 2002); (2) increasing positive emotions, such as gratitude or hope (Lykken, 2000; Platt et al., 2020); (3) identifying personal strengths (Seligman & Csikszentmihalyi, 2000); and (4) training cognitive factors relevant to self-esteem, such as self-concept and self-efficacy (Bandura, 1993, 1997; Seligman et al., 2009). Additionally, we included (5) a session of psychoeducation on anxiety regulation, given the presence of general anxiety during the pandemic restrictions.

First Session (1 h) First session exercises were designed to set goals and to encourage students to develop a list of academic objectives during the MPPI. Establishing goals helps students improve their academic achievement and overall performance by regulating their academic experience as they pursue these goals. Moreover, personal goal

setting has been recognized as essential to personal growth and achievement (Sheldon et al., 2002; Vázquez & Hervás, 2008), since goals represent a person's energized initiatives to achieve positive self-change and an enhanced meaning and purpose in life (Ryff & Singer, 1998). Self-established goals have also been found to increase intrinsic motivation (Deci & Ryan, 1985).

Second to Fourth Sessions (1 h each) Exercises delivered in these sessions aim to cultivate positive emotions or cognitions that help students increase their self-efficacy, self-concept, and attitudes about their academic experience (Boniwell & Ryan, 2012). These activities include the following:

2nd Session: Writing a gratitude letter, practicing counting blessings and remembering / replaying positive academic experiences (e.g., Vázquez & Hervás, 2008; Seligman et al., 2005).

3rd Session: Identifying personal strengths to develop a better self-concept and self-esteem (Seligman et al., 2005, 2009).

4th Session: Writing about the best selves in the present and the future (King, 2001; Sheldon, 2006) and providing a brief psychoeducation on anxiety according to Spielberger's theory (2019). The objective is to empower adolescents with the knowledge to identify anxious situations, including recognizing cognitive and physiological indicators, as well as reactions to potential dangers and threats to self-esteem. Moreover, it aims to provide education on consciously inducing relaxation and transforming thoughts and cognitions associated with self-efficacy to effectively cope with these threats.

Session 5 (1 h) Overall evaluation of the intervention, progress made, achievements, openness to new academic goals, and closing exercises of gratitude and group positive reinforcement.

Statistical Analyses

Descriptive statistics were calculated to analyze gender, anxiety levels, motivation, and performance. The means and standard deviations were computed for these variables, including average grades and the number of failed subjects from students' academic records. The data were further analyzed based on gender and condition (brief MPPI

Table 1 Sociodemographic data of the sample

	Control <i>n</i> = 94	Intervention <i>n</i> = 54
Females	46	25
Males	48	29
% of different ethnicities	26%	28%

Table 2 Means and standard deviations for age, average grades, and number of failed subjects by condition and gender

	Gender <i>M</i> (<i>SD</i>)		Intervention group <i>M</i> (<i>SD</i>)	
	Female (<i>n</i> = 71)	Male (<i>n</i> = 77)	Intervention (<i>n</i> = 94)	Control (<i>n</i> = 54)
Age	12.44 (0.50)	12.47 (0.50)	12.48 (0.50)	12.41 (0.49)
Average grades	5.94 (1.38)	5.41 (1.23)	5.61 (1.42)	5.75 (1.16)
Number of failed subjects	3.10 (1.93)	3.22 (1.99)	3.17 (1.92)	3.15 (1.95)
Anxiety	26.80 (6.17)	26.19 (5.77)	26.01 (5.70)	27.35 (6.37)
Global motivation	98.57 (21.56)	102.60 (20.36)	105.83 (20.20)	89.65 (17.79)
Intrinsic motivation	68.88 (14.61)	71.05 (14.04)	72.91 (14.54)	64.80 (12.47)
Extrinsic motivation	29.69 (8.30)	31.55 (8.37)	33.91 (7.54)	24.85 (6.38)

vs. control). Further, an analysis of variance (one-way ANOVA) complemented the descriptive statistics to rule out baseline group differences in age, anxiety, motivation, and performance. In these baseline comparisons, we only controlled for the gender variable since age was almost the same for all participants (12–13 years old). To examine the effectiveness of the intervention, a General Linear Model (GLM) of repeated measures was employed. This analysis compared the pre- and post-intervention results, focusing on anxiety (H1), motivation (H2), and performance (H3) in terms of both average grades and the number of failed subjects. The analysis controlled for the influence of gender. Partial eta-square (η^2) and observed power were also calculated. Finally, multiple regression analyses (using a stepwise method) were conducted to determine the best predictors of students' anxiety, motivation, and performance which will complement the answers to our proposed hypothesis (H4). Statistical tests were bilateral, with type I error set at 5%. The statistical package SPSS 25 was used to conduct all analyses.

Results

Descriptive Statistics and Baseline Comparisons

The control group was matched and contrasted with the intervention group in terms of gender and percentage of the different ethnicities of immigrant students (see Table 1). Students' specific ethnicity or origin was not recorded.

Descriptive statistics and one-way ANOVAs were conducted to examine potential baseline differences between the groups. Table 2 provides an overview of these statistics, including means and standard deviations for age, performance variables (average grade and the number of failed subjects) and anxiety. The data is presented based on the experimental condition and gender of the groups.

The one-way ANOVA, after controlling for gender, no group differences were found concerning age ($F_{(1,146)} = 1.07$; $p = .30$), performance in terms of the number of failed subjects ($F_{(1,146)} = 0.14$; $p = .70$), anxiety ($F_{(1,146)} = 0.38$; $p = .54$), intrinsic motivation ($F_{(1,146)} = 0.85$; $p = .36$), extrinsic motivation ($F_{(1,146)} = 1.83$; $p = .18$) or global motivation ($F_{(1,146)} = 1.36$; $p = .24$). However, we found significant differences in performance (average grades) at pre-intervention ($F_{(1,146)} = 6.21$; $p = .01$), with girls showing higher average grades than boys (see Table 2). A second ANOVA, controlling for the intervention/control condition, revealed no differences in age, performance at pre-intervention, or anxiety. On the other hand, significant baseline differences were also observed in motivation factors (intrinsic, extrinsic, and global) with higher baseline scores in the experimental group. The two groups could be matched on these confounding variables prior to the intervention. No significant interaction was observed between gender and group condition.

Impact of the MPPI on Anxiety, Motivation, and Performance

Anxiety

Regarding H1, the results indicated a significant reduction in anxiety scores within the brief MPPI group ($F_{(1,146)} = 7.82$; $p = .001$; $\eta^2 = 0.05$; observed power = 0.79). In contrast, anxiety scores in the control group increased, albeit not significantly, at the post-intervention assessment. The between-group analysis of variance showed that the differences in anxiety scores at post-intervention were also significantly lower in the brief MPPI group than the control group ($F_{(1,161)} = 10.76$; $p = .001$; $\eta^2 = 0.07$; observed power = 0.90). These results supported our third hypothesis.

Intrinsic, Extrinsic, and Global Motivation

Regarding the second research question (H2), the analysis showed a significant increase in intrinsic motivation within the brief MPPI group ($F_{(1,146)}=28.63$; $p<.0005$; $\eta^2=0.16$; observed power=1). The between-subject analysis of variance yielded significant group differences in this type of motivation, showing a reduction in the control group post-intervention. Hence, pre- post-intervention differences in intrinsic motivation were only found for the brief MPPI group ($F_{(1,146)}=31.45$; $p<.0005$; $\eta^2=0.18$; observed power=1). For extrinsic motivation, significant within-subject differences were observed. However, between-subject analysis of variance indicated that the brief MPPI group obtained significantly higher scores than the control group for extrinsic motivation at pre- and post-intervention ($F_{(1,146)}=75.82$; $p<.000$; $\eta^2=0.34$; observed power=1). Regarding global motivation, the GLM also yielded significant within-subject differences in the brief MPPI group ($F_{(1,146)}=13.68$; $p<.0005$; $\eta^2=0.09$; observed power=0.96), with participants obtaining higher scores in global motivation at the end of the intervention. Significant between-subject differences in global motivation were also observed between the brief MPPI and the control groups ($F_{(1,146)}=54.29$; $p<.000$; $\eta^2=0.27$; observed power=1.00), with the brief MPP group showing higher scores of general motivation. These results supported our second hypothesis.

Academic Performance

A GLM (repeated measures) was used to address the H3. A significant within-subject effect was found, with both groups showing an increase in performance in terms of average grade ($F_{(1,146)}=10.98$; $p=.001$; $\eta^2=0.07$; observed

power=0.91). However, the between-subjects analysis revealed that this improvement was significantly greater in the brief MPPI group ($F_{(1,146)}=4.49$; $p=.04$; $\eta^2=0.03$; observed power=0.56). We also observed a significant decrease in the number of failed subjects in both groups at post-intervention ($F_{(1,146)}=4.38$; $p=.04$; $\eta^2=0.03$; observed power=0.55). However, the between-subject analysis revealed a marginal difference between the brief MPPI and the control group ($F_{(1,146)}=3.33$; $p=.07$; $\eta^2=0.02$; observed power=0.44). These results partially support our third hypothesis. Pre- and post-intervention means and standard deviations for the variables of interest are displayed in Table 3.

Predictors of Academic Achievement, Motivation, and Anxiety

Table 4 displays the predictors of the study's dependent variables as indicated by the linear regression models. Participation in the brief MPPI was found to predict improved academic achievement, which can be attributed to the reduction in anxiety levels (H1), the increase in intrinsic, extrinsic, and global motivation (H2), and the decrease in the number of failed subjects (H3) post-intervention. Higher levels of anxiety at the end of the intervention were predictive of poorer academic performance, including an increase in the number of failed subjects and a decrease in average grades post-intervention. Notably, participating in the brief MPPI was associated with a lower number of failed subjects. Furthermore, the number of subjects failed prior to the intervention and anxiety levels post-intervention were significant predictors of the number of failed subjects at the post-intervention assessment. Similarly, the pre-intervention average grade, the number of failed subjects prior to the intervention, and anxiety levels post-intervention were predictive of the average grade at post-intervention.

Table 3 Means and standard deviations for anxiety, intrinsic, motivation, and performance at pre- and post-test in the experimental and control group

	Intervention group		Control group	
	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>
Anxiety	26.01 (5.70)	23.54 (6.12)	27.35 (6.37)	28.22 (6.69)
Motivation				
Intrinsic motivation	72.91 (14.54)	76.33 (11.65)	64.8 (12.47)	61.39 (10.52)
Extrinsic motivation	33.92 (7.54)	39.15 (7.79)	24.85 (6.38)	29.46 (6.92)
Global motivation	106.83 (20.20)	115.48 (16.75)	89.65 (17.79)	90.85 (13.69)
Performance				
Average grade	5.61 (1.42)	6.74 (1.31)	5.75 (1.16)	5.86 (1.56)
Number of failed subjects	3.17 (2.26)	1.32 (1.45)	3.15 (1.79)	2.19 (1.67)

Discussion

The present study aimed to implement a brief MPPI in a high school setting during the third wave of COVID-19. It also aimed to assess the impact of this intervention on psychological distress (anxiety) and on other academic indicators (motivation and performance) in a sample of Spanish adolescents studying in a high-school of the Barcelona area, which was heavily affected by the COVID-19 pandemic.

Our findings supported all three hypotheses, demonstrating that the brief MPPI had a positive impact on adolescents' anxiety reduction (H1), increased motivation (H2), and improved academic performance (H3) during the pandemic. The intervention group showed significant

Table 4 Linear regression results for anxiety, motivation and performance

Dependent variables	Predictors in the model	B	T	p	R ²
Anxiety at post-test	Anxiety at pre-test	0.61	7.63	<0.001	0.38
	Participating in the MPPI	-4.07	-4.44	<0.001	
Motivation Intrinsic motivation at post-test	Intrinsic motivation at pre-test	0.83	13.48	<0.001	0.68
	Extrinsic motivation at post-test	-0.25	-2.11	0.04	
	Participating in the MPPI	9.47	6.92	<0.001	
Extrinsic motivation at post-test	Extrinsic motivation at pre-test	0.36	2.88	0.01	0.49
	Participating in the MPPI	4.00	3.62	<0.001	
	Anxiety at pre-test	0.24	3.00	0.004	
	Average grade at pre-test	-0.45	-0.17	0.01	
	Global motivation at pre-test	0.12	0.30	0.02	
Global motivation at pos-test	Global motivation at pre-test	0.86	9.53	<0.001	0.66
	Extrinsic motivation at post-test	-0.52	-2.19	0.03	
	Participating in the MPPI	13.20	6.56	<0.001	
	Gender (female)	3.85	3.02	0.04	
Performance Average grade at post-test	Average grade at pre-test	0.88	26.36	<0.001	0.84
	Failed subjects at pre-test	0.37	5.23	<0.001	
	Failed subjects at post-test	-0.41	-4.60	<0.001	
	Anxiety at post-test	0.03	2.13	0.04	
Number of failed subjects at post-test	Number of failed subjects at pre-test	0.57	11.42	<0.001	0.50
	Participating in the MPPI	-0.51	-2.45	0.02	
	Anxiety at post-test	0.32	2.18	0.03	

changes, with moderate to high effect sizes, in all three indicators: a significant increase in average grades ($\eta^2=0.03$; observed power=0.56) and motivation ($\eta^2=0.27$; observed power=1.00), and a significant decrease in anxiety levels ($\eta^2=0.07$; observed power=0.90) compared to the control group, where no significant changes were observed in these indicators. Although baseline motivational levels were higher among the participants of the experimental group,

the intervention increased both their intrinsic and extrinsic motivation, thus this result further reinforces the hypothesis that the program was effective, since the greatest motivational differences between pre and posttest were observed precisely in the experimental group. Furthermore, regression analyses showed how participating in the brief MPPI was a significant predictor for changes observed in the various behavioral outcomes measured. The brief MPPI accounted for a significant portion of variance in adolescents' anxiety levels, intrinsic and extrinsic motivation, global motivation, and academic performance. These results are consistent with previous studies, indicating the effectiveness of (brief) MPPIs in academic settings, promoting well-being and academic performance even during health crises such as pandemics (Bolier et al., 2013; Muro et al., 2018; Platt et al., 2020; Shankland & Rosset, 2017; Tejada-Gallardo et al., 2020, 2022). Furthermore, our results also align with those of previous studies suggesting that lower anxiety is associated with higher academic performance and motivation (Balogun et al., 2017; Singh & Jha., 2013; Tang et al., 2023; Vitasari et al., 2010a, 2010b).

We also find support in pre-pandemic studies conducted in American, English, and Italian samples (Boniwell et al., 2016; Platt et al., 2020; Ruini et al., 2009; Seligman et al., 2009), as well as pioneering Spanish studies that used more extensive MPPIs (Argüis et al., 2012; Muro et al., 2018; Tejada-Gallardo et al., 2022). Our findings contribute to the growing body of empirical evidence supporting the application of MPPIs in Spanish educational settings and Western societies. Although the effects of this brief MPPI were small, they were in line with our expectations considering the limited duration of the intervention. A more extensive and comprehensive follow-up program may yield greater benefits for students. Therefore, further replications are needed before drawing firm conclusions regarding the efficacy of MPPIs. Nevertheless, our results suggest that brief MPPIs can serve as a systemic and cost-effective psycho-educational strategy in academic settings to help students cope with increased anxiety following a pandemic or other adverse circumstances. By supporting public health services and contributing to mental health prevention efforts, these interventions can play a significant role in promoting students' well-being (Kauhanen et al., 2022; Luijten et al., 2021; Pizarro-Ruiz & Ordóñez-Cambor, 2021; Ravens-Sieberer et al., 2021; Viner et al., 2022; WHO, 2020). In conclusion, MPPIs, such as the one implemented in our study, have the potential to protect adolescents from mental health complications, as they address crucial aspects of academic experience and anxiety management during challenging times and global crises (Barbosa-Camacho et al., 2022; Cassady & Johnson, 2002; Fatih & Dadandi, 2020; Hossain et al., 2021; Spielberger, 2019).

Limitations

The results of the present study should be interpreted with caution due to certain limitations. Firstly, the sample size was relatively small, which may have limited our ability to detect significant group differences of substantial magnitude. Additionally, the participants were from the first academic grade of high school (12–13 years old), thereby restricting the generalizability of the findings to other stages of adolescence, such as late adolescence. Further studies are needed to replicate this program with larger sample sizes covering a wider range of developmental stages in adolescence across various cultural contexts. Secondly, we acknowledge that the demographic characteristics of the schools were not collected in this study, which prevented their inclusion as control variables in the analyses. Considering these variables in future research endeavors would provide valuable insights into their potential influence on the outcomes of interest. Thirdly, we relied on self-report measures in adolescents, which can be subject to various biases such as social desirability. Therefore, using the reports of close relatives or teachers could provide more accurate measures of our study variables. Finally, it is important to note that follow-up assessments were not conducted, since we only assessed the measures at two time-points (pre- and post-test). Further follow-up assessments (six and twelve months later) should be included to determine whether the effects of the intervention program remain stable over time. Given all these limitations, more tightly controlled studies are necessary to reach more definitive conclusions regarding the efficacy of MPPIs on academic achievement, motivation, and well-being.

Implications and Conclusions

The most notable implication is of the present study is the potential implementation of MPPIs in high schools to positively impact students' anxiety, motivation, and performance. Consistent with previous studies conducted in other cultures and life stages (Bolier et al., 2013; Knoop, 2011; Ruini et al., 2009; Shankland & Rosset, 2017; Platt et al., 2020; van Agteren et al., 2021), the findings presented here suggest that the implementation of brief MPPIs in high school curricula (e.g., as part of the tutoring spaces) could improve not only academic performance but also adolescents' ability to manage their psychological well-being. Therefore, the findings of the present study indicate that this brief MPPIs could be suitable for meeting adolescents' psychological challenges and needs after the COVID-19 pandemic (Green, 2020; Luijten et al., 2021; Peek et al., 2018; WHO, 2020). Its multicomponent nature, its duration (1 h per week for five weeks), and its group design (around

30 students per class) could be considered a cost-effective alternative for mental health prevention, but also one that could be implemented in high schools as a psychoeducational strategy to upskill students in wellbeing management.

Finally, the present results also highlight the importance of high-school as a space for safeguarding mental health and facilitating adolescents' optimal development since the school setting is key for mental health education and a highly influential context in adolescents' psychosocial development (Fazel et al., 2014; Platt et al., 2020). As such, brief MPPIs could be included in school curricula to facilitate adolescents learning mental health strategies that will be useful across their lifespan (Seligman et al., 2009; Spratt et al., 2006). However, these findings require further replications, especially during uncertain times such as pandemics or other anxiety-inducing catastrophes that carry a high global psychological threat and can quickly lead to a deterioration in the mental health and performance of the most vulnerable groups in society, such as adolescents and children (Peek et al., 2018; WHO, 2020).

Funding Open Access Funding provided by Universitat Autònoma de Barcelona.

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