

Social climate in university classrooms: A mindfulness-based educational intervention

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Abstract

There is a limited number of studies on the impact of mindfulness-based interventions on university students and their positive effect on collective experiences of shared flow. The aim of the present study was to explore the effectiveness of mindfulness training in terms of reducing stress and enhancing well-being, experiences of shared flow and classroom climate (engagement and affiliation). The intervention and control groups were matched by age and sex ($n = 125$; $M = 20.71$, $SD = 4.60$, 68% women). The intervention group comprised mindfulness exercises performed in the classroom over the course of 7 weeks. The principal variables were measured at pretest and posttest, and shared flow was also measured in the intervention group. In comparison with the control group, statistically significant differences were observed in the intervention group in relation to mindfulness, perceived stress, and classroom climate (affiliation). Furthermore, the perception of shared flow among students increased from the beginning to the end of the program. Mindfulness skills were found to mediate improvements in perceived well-being and stress. It is concluded that mindfulness practice can turn learning into a challenging and shared task. The study highlights the importance of fostering programs that enhance the development of competencies related to mindfulness among university students.

KEYWORDS

mindfulness, perceived stress, shared flow, social climate, university students

INTRODUCTION

Stress levels among university students are generally prevalent, higher even than among the general population (Canby et al., 2015; Fernández-Rodríguez et al., 2019; Lippke et al., 2021). Stress negatively affects learning and hampers different cognitive processes such as attention and concentration, resulting in a considerable reduction in academic performance and physical and mental health (Amutio et al., 2015; Messer et al., 2015; Vallejo-Martín et al., 2018). In contrast, subjective well-being and relaxation-mindfulness habits (in the personal, academic, and family-domestic domains) have been found to positively influence classroom climate and performance (Amutio et al., 2020; Gutiérrez & Tomás, 2018; López-González et al., 2016).

Mindfulness is defined as heightened awareness of the present moment, involving sustained simple focus with minimal

distracting judgment and tension (Smith, 2019), and can be viewed as a psychological trait, a skill or competency, and/or a technique that can be learned. Through ongoing practice, we learn to concentrate on the task we are engaged in at the present moment, without letting our minds wander, become distracted, or reacting and feeling trapped by our emotions (i.e., non-reactivity). The practice also brings with it a state of calmness and serenity. This provides students with a new outlook that facilitates reflection and learning.

Meditation techniques have recently been incorporated into various psychotherapeutic (mindfulness-based interventions) and psychoeducational formats (mindfulness-based educational programs) in different countries (López-González et al., 2019), with positive results. Mindfulness programs implemented in the school curriculum have been found to improve the executive functions of children and adolescents in

terms of emotion regulation, enabling them to cope with excessive levels of negative emotions that would otherwise interfere with their academic performance (Moreno-Gómez et al., 2020; Zoogman et al., 2015) and enhancing their attention and motivation to learn (Franco et al., 2020). In the university sphere, an increasing number of studies have reported positive effects in terms of reducing stress and anxiety among students (Gallego et al., 2014; Voss et al., 2020). However, from a practical perspective, the use of these techniques in this field is very limited.

Previous research has indicated that classroom climate is one of the variables that most influences academic performance (Alonso-Tapia & Nieto, 2019; Cahyadi et al., 2021; López-González et al., 2018). Classroom climate refers to the quality of students' social and emotional interactions, both among themselves and with their teachers (Braun et al., 2019; López-González et al., 2016). A supportive classroom climate has a positive impact on the stress levels and academic performance of students (Carmona-Halty et al., 2019; Haugan et al., 2021). On the contrary, a negative climate constitutes a source of stress that may give rise to anxiety and have a negative impact on their health (Braun et al., 2019). It may also make it harder for students to study, resulting in dropout (López-González et al., 2016; Soriano et al., 2020). According to data published by the Spanish Ministry of Science, Innovation and Higher Education, during the 2018–2019 academic year, 33% of university students abandoned their studies (Ministerio de Ciencia, Innovación y Universidades, 2019), making improvement in student retention an urgent priority (Zamora et al., 2020).

The present study

Currently, there is a scarcity of studies in mindfulness in relation to flow. One of the main novel contributions made by this study is the inclusion of a collective variable in relation to mindfulness: optimal experiences of shared flow. Shared flow denotes an optimal psychological state in which all members of a group experience the feeling of being absorbed in an activity. Jackson and Csikszentmihalyi (1999) proposed nine dimensions in the experience of flow: (a) balance between personal skills and the challenge posed by the activity; (b) action-awareness merging: The individual acts automatically; (c) clear goals; (d) immediate feedback; (e) concentration on the activity, total absorption; (f) sense of control over the activity and one's own actions; (g) loss of self-consciousness, feeling of merging; (h) distorted sense of time; and (i) autotelic or intrinsically rewarding experience. Several studies have confirmed the validity of these nine dimensions as well as their association with a high level of performance, positive affect, and individual well-being (Knierim, 2020; Nakamura & Tse, 2020; Tse et al., 2021; Zumeta, Basabe, et al., 2016; Zumeta, Oriol, et al., 2016).

Collective encounters and group activities give rise to a shared experience that is intensified when participants engage in a common task (e.g., physical-sport activity) that is challenging, but not beyond their ability to accomplish, and has a clear set of goals. This enables them to experience the different

manifestations of flow and results in an autotelic experience (Knierim, 2020; Zumeta, Oriol, et al., 2016). Participation in a group activity that is perceived as important, intense, and satisfactory leads to the experience of flow with others as well as to a series of positive emotions that foster shared learning.

There is still very little evidence of the effects of mindfulness on classroom climate and on collective experiences of shared flow, and their impact on university students (Moore, 2013; Sinnott et al., 2020). Moreover, few studies have sought to explore the mechanisms that determine the efficacy of mindfulness itself. In this regard, Pizarro et al. (2020) concluded that group mindfulness exercises based on conscious movement resulted in higher levels of compassion. These changes were mediated by perceived emotional synchrony between the group members and shared flow. Similarly, Alfaro (2016) found that flow mediated the relationship between mindfulness and academic performance in a sample of university students.

The present study therefore seeks to fill this gap in the research by exploring the effects of participation in collective mindfulness exercises on attention, stress, perceived well-being, the learning atmosphere (classroom climate), and experiences of shared flow. It also aims to determine whether mindfulness skills mediate these effects.

Based on our review of the literature, we formulated the following hypotheses: In comparison with the control group, the mindfulness intervention will generate positive changes in students, including increased mindfulness competencies (FFMQ measure), reduced remembered perceived stress, and enhanced subjective well-being and classroom climate, fostering stronger feelings of connectedness with the class group as well as increasing experiences of shared flow (H1); Increased mindfulness competencies will mediate the effects of the intervention on perceived stress, students' well-being, and experiences of shared flow (H2); Shared flow will be positively associated in the intervention group with mindfulness, the criterion variables classroom climate and affiliation with the class group, and individual well-being (H3).

METHOD

Participants

The sample was made up of Social Work undergraduates at the University of the Basque Country (UPV/EHU), divided into an intervention group ($n = 88$; $M = 21.14$, $SD = 4.14$) and a control group ($n = 37$; $M = 19.68$, $SD = 5.46$), matched by age and sex ($M = 20.71$, $SD = 4.60$; 68% women). Participants agreed to take part in the study voluntarily after having been duly informed and signing the corresponding informed consent document. The control group comprised students from the same year and degree course as were those in the intervention group and were on a waiting list. After the end of the intervention, they were offered a mindfulness workshop. Both groups completed the questionnaires at the same two time points.

Instruments

Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2006)

This measure comprises 39 items and was validated in Spanish by Cebolla et al. (2012). It measures a person's general tendency to be mindful in their everyday life, based on five skills or factors: *Observing* (e.g., "While walking, I am aware of the sensations in my body."); *Describing* (e.g., "I can describe my feelings well."); *Acting with awareness* (e.g., "I am easily distracted." –[inverted item]); *Absence of judgment* (e.g., "I criticize myself for having irrational emotions and thoughts." –[inverted]); and *Non-reactivity* (e.g., "I can perceive emotions without reacting to them."). Higher scores indicate higher levels of mindfulness. The response scale ranges from 1 (*never or very rarely true*) to 5 (*always or very often true*). The reliability values for the complete scale were Cronbach's $\alpha = .849/.869$ and McDonald's $\omega = 0.854/0.874$, for the pre- and postmeasures, respectively.

Perceived Stress Scale (PSS; Cohen et al., 1983, adapted for the Spanish context by Remor, 2006)

This 14-item scale measures perceived stress levels over the past 2 weeks (e.g., "Have you felt nervous and stressed?"). Answers are given on a response scale ranging from 0 (*never*) to 4 (*very often*). The reliability values for the complete scale were Cronbach's $\alpha = .828/.845$ and McDonald's $\omega = 0.837/0.850$, for the pre- and postmeasures, respectively.

Pemberton Happiness Index (PHI; Hervás & Vázquez, 2013)

This index comprises 11 items that measure four dimensions of remembered subjective well-being: general well-being (two items; e.g., "I am very satisfied with my life."); eudaimonic well-being (six items; e.g., "I feel I am able to solve the majority of my daily problems."); hedonic or affective well-being (two items; e.g., "I have a lot of bad moments in my daily life." [inverted]); and social well-being (one item; e.g., "I think that I live in a society that lets me fully realize my potential."). Items are rated on a scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*). The reliability values for the complete scale were Cronbach's $\alpha = .865/.845$ and McDonald's $\omega = .889/.866$, for the pre- and postmeasures, respectively.

Classroom Climate or Social Atmosphere Scale (Martínez de Taboada et al., 2004)

Two dimensions of the scale were used, each comprising four items: *Engagement* (e.g., "Students express a lot of interest

in what they do in class."); and *Affiliation* (e.g., "Students in the class really get to know each other well."). Response options were 0 (*false*) or 1 (*true*). The reliability values for the pre- and postmeasures, respectively, were KR-20 = 0.537/0.665 and McDonald's $\omega = 0.560/0.667$ for Engagement, and KR-20 = 0.558/0.396 and McDonald's $\omega = 0.567/0.425$ for Affiliation.

Inclusion of Other in the Self (IOS) Scale

A pictorial measure developed by Aron et al. (1992) and validated by Swann et al. (2009) was used to assess identity fusion within the classroom group and with people in general (e.g., "Which diagram best describes your relationship with your classmates?" "And with people in general?" Pizarro et al., 2018) (Figure 1). This instrument has been used in several studies focusing on collective events (Páez et al., 2015; Zumeta, Oriol, et al., 2016).

Shared Flow Scale (Zumeta, Basabe, et al., 2016)

This scale was adapted from the State Flow Scale by Jackson and Marsh (1996), through the Spanish version by García et al. (2008). During the adaptation, statements about the shared experience were redrafted in the plural ("we"). The scale was only administered to the experimental group in relation to the academic activities and tasks carried out in the classroom before and after the end of the mindfulness exercises because the aim was to measure collective experiences of shared flow following the end of the intervention. For this study, we used nine items (e.g., "We were totally focused on what we were doing.") from the complete 27-item version, reflecting the nine facets of flow outlined earlier. Items are rated on a 7-point Likert-type response scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Previous studies (see Zumeta, Basabe, et al., 2016) have found that the second-order factor model (one global factor that underlies all nine dimensions) has adequate construct validity and internal consistency. The reliability coefficients for the complete scale in this study were Cronbach's $\alpha = .805/.846$ and McDonald's $\omega = 0.837/0.667$, for the pre- and postmeasures, respectively.

Procedure

The intervention was delivered prior to the start of social psychology classes, once a week for 7 consecutive weeks. Students were instructed to remain seated on their chairs in a comfortable position, with their backs straight and feet planted firmly on the floor. They were then played a series of recorded audio

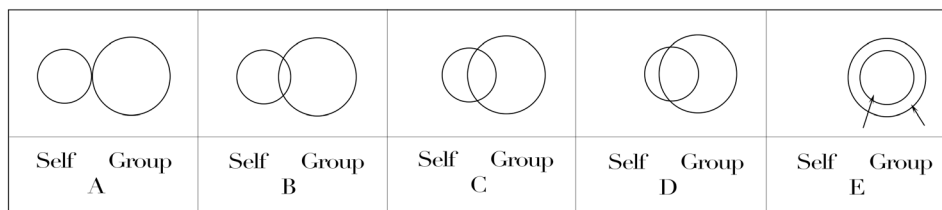


FIGURE 1 Inclusion of other in the self (IOS) scale (Swann et al., 2009)

instructions lasting 13 min. The exercise was divided into the following parts: (a) brief explanation of the exercise (2 min); (b) awareness and observation of feelings in different parts of the body, from feet to head (body scan: 3 min); (c) awareness and observation of the sensations of breathing: abdomen, chest, nose, and body in general (4 min); (d) observing thoughts (i.e., distractions, worries, images, etc.) and emotions, becoming aware of them and gently refocusing attention on breathing and the body (4 min); and (e) paying attention to the sound of a meditation song (10 s).

Students were also asked to carry out the exercises at home on a daily basis following the same recorded audio instructions. Once the intervention with the experimental group had finished, the control group was offered the chance of participating in a mindfulness workshop.

Data analysis

The study followed a quasi-experimental design of repeated pre-/postmeasures with the intervention (mindfulness) and control (conventional teaching) groups. The SPSS Version 22.0 statistical package was employed for the descriptive analyses and multivariate analyses of variance (ANOVAs) to calculate the effect of the intervention on different variables. The effect sizes (partial η^2) (negligible $\eta^2 \leq .009$; small $.01 \leq \eta^2 \leq .089$; medium $.09 \leq \eta^2 \leq .249$; large $\eta^2 \geq .25$) were also calculated in accordance with the criteria established by Tabachnick and Fidell (2007). Effect sizes were transformed between the η^2 and d statistics in accordance with the formulations proposed by Cohen (1988). The power analysis-based required sample size was calculated using the G*Power software package (Faul et al., 2007). If the criteria applied for a between-subjects design is an expected power of .90 with an error of .05 for a small effect size (.25), then the ideal sample size is 108.

Reliability analyses (Cronbach's α and McDonald's ω) were conducted using the Jeffreys's Amazing Statistics Program (JASP) open software package (<https://jasp-stats.org/>), 0.12 version (JASP Team, 2021). Finally, mediation analyses were performed to assess the indirect effect of the intervention on perceived stress and well-being, using the PROCESS Version 3.0 macro (Hayes, 2013), with Mediation Model 4.

RESULTS

Between-group differences

The means and *SDs* for each student variable at pre- and posttest are presented in Table 1.

The repeated measures ANOVAs controlling for age and sex revealed statistically significant differences between the intervention and control groups. First, mindfulness levels in the intervention group, as measured by the total score on the FFMQ scale, increased significantly, $F(1, 123) = 4.181$, $p \leq .043$, $\eta^2_p = .033$, equivalent to a $d = 0.37$, with no effect of sex, $F(1, 123) = 0.025$, $p \leq .876$, or age, $F(1, 123) = 0.149$, $p \leq .700$, being observed. Second, stress levels in the intervention group decreased in relation to the control group, $F(1, 123) = 3.953$, $p \leq .049$, $\eta^2_p = .032$, $d = 0.365$, with no effect of sex, $F(1, 123) = 0.162$, $p \leq .688$, or age, $F(1, 123) = 1.108$, $p \leq .295$, being observed. Third, the affiliation dimension of classroom climate improved in the intervention group, $F(1, 123) = 5.247$, $p \leq .024$, $\eta^2_p = .042$, $d = 0.42$, with no effect of sex, $F(1, 123) = 1.386$, $p \leq .241$, or age, $F(1, 123) = 0.116$, $p \leq .734$, being observed. No statistically significant differences between both groups were observed in any of the other variables studied: Well-being (PHI), $F(1, 123) = 0.663$, $p \leq .417$, Engagement dimension of classroom climate, $F(1, 123) = 0.004$, $p \leq .949$, and Inclusion of the Self in the Group or identity fusion, IOS, $F(1, 123) = 0.139$, $p \leq .710$. These findings partially support Hypothesis 1.

Mediation models

After controlling for the pretest measure using the FFMQ scale, the results revealed that the intervention increased participants' competency in mindfulness, and that this increase reduced perceived stress levels (controlling for baseline stress levels), with significant direct and indirect effects (Figure 2). The intervention was also found to have a positive effect on subjective well-being (PHI) through mindfulness competencies, measured using the FFMQ, with FFMQ having a direct effect on well-being and the intervention having an indirect one through FFMQ (Figure 3). No significant mediation effects were obtained in the relationship between mindfulness

TABLE 1 Means and *SDs*: Pre and posttest measures of the study variables

Variables	Pretest				Posttest			
	Control		Intervention		Control		Intervention	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Perceived stress	3.05	0.43	3.05	0.47	3.07	0.41	2.87	0.49
Mindfulness	3.03	0.42	3.10	0.37	3.00	0.40	3.18	0.38
Classroom climate	0.54	0.29	0.51	0.30	0.48	0.25	0.56	0.26
Well-being	7.06	1.11	6.96	1.18	7.22	1.08	7.26	1.12
Shared Flow	—	—	4.17	0.89	—	—	4.47	0.76

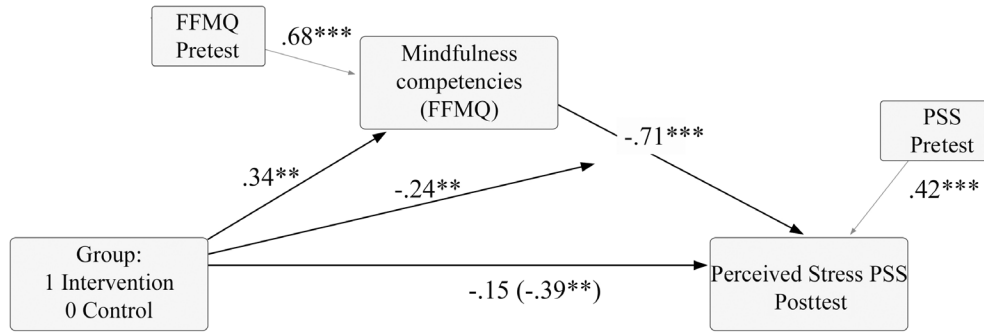


FIGURE 2 Effect of mindfulness intervention on perceived stress through FFMQ (standardized indirect effect \rightarrow intervention \rightarrow FFMQ \rightarrow stress; PSS $-.243(.095)$; 95% confidence interval $[-.449, -.0783]$; $**p \leq .01$; $***p \leq .001$. Total effect in brackets)

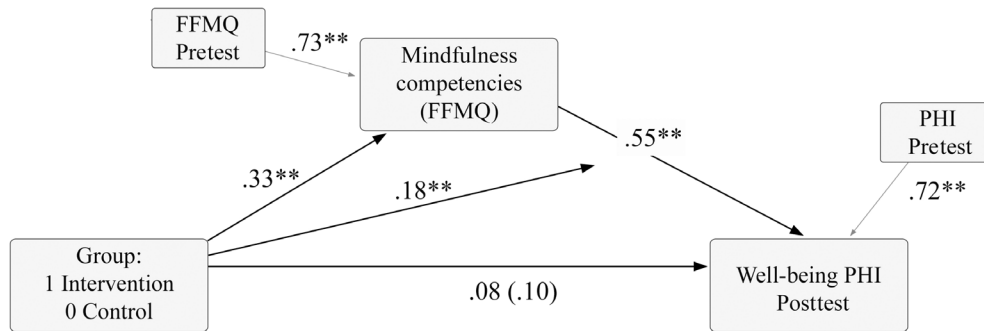


FIGURE 3 Effect of mindfulness intervention on well-being PHI through FFMQ (standardized indirect effect \rightarrow intervention \rightarrow FFMQ \rightarrow well-being; PHI $.183(.079)$; 95% confidence interval $[.053, .360]$; $**p \leq .01$. Total effect in brackets)

competencies and shared flow. These results therefore partially support Hypothesis 2.

Results for the intervention group

An increase in shared flow was observed in the intervention group between the start and the end of the intervention in Week 7, $F(1, 87) = 10.209$, $p \leq .002$, $\eta_p^2 = .105$, $d = 0.685$.

Regarding correlations (Hypothesis 3), following the intervention, shared flow was associated with positive effects in the intervention group. Specifically, the greater the shared flow: (a) the better the Engagement dimension of Classroom climate, $r = .27$, $p \leq .05$; (b) the greater the Identity Fusion with the class group, $r = .308$, $p = .004$; and (c) the higher the score for the Non-reactivity and Non-Judging dimensions of the FFMQ, $r = .25$, $p < .05$; $r = .21$, $p < .05$, respectively. No statistically significant correlations were found between shared flow and the rest of the variables studied. These findings partially support Hypothesis 3.

DISCUSSION

The results of the present study reveal significant improvements in perceived stress levels and mindfulness competencies in the intervention group, in comparison with the control

group. These findings are consistent with and serve to corroborate those reported previously regarding the efficacy of mindfulness programs among university students (De la Fuente et al., 2010; Gallego et al., 2014; Gómez-Odrizola et al., 2019; Moix et al., 2021; Trujillo et al., 2019). Similarly, the significant improvements observed in classroom climate also support the results reported in previous studies (López-González et al., 2016; López-González et al., 2018; McConville et al., 2017). These results are also in line with other studies with samples of professionals, where improvements in work engagement and performance levels were obtained after the application of a short mindfulness-based interventions program (Coo & Salanova, 2018).

Mindfulness enables individuals to contemplate their thoughts and sensations as events in continual flow, only to be noted and observed as something transitory and non-permanent. This breaks away from the usual pattern of thinking–feeling–acting as well as the habit of assessing and judging thoughts and viewing them as something in their own right because individuals learn to observe them without identifying with them or reacting to their presence in the usual automatic manner. This in turn enables them to flow, allowing certain activities (emotions, physiological changes, etc.) that operate autonomously in their organism, regulated by the autonomous nervous system, to function in accordance with their own natural self-regulation systems (Bergen-Cico et al., 2015; Franco et al., 2016). Moreover, practicing

mindfulness allows individuals to acquire greater cognitive flexibility and attention regulation because they learn to pay attention to their breathing and/or bodily sensations while also avoiding distractions (Haukaas et al., 2018; Wimmer et al., 2020). This results in a decrease in stressful assessments and reactivity to stress, coupled with a longer term improvement in physical and mental health, better adaptation to one's environment, and enhanced academic performance (Bai et al., 2020; Mettler et al., 2019; Ramasubramanian, 2017; Yuan & Liu, 2019).

No significant differences were found between the intervention and control groups in terms of remembered perceived well-being following the intervention. Unlike perceived stress, well-being tends to be a more stable measure, indicating that the intervention was probably not long or intense enough to trigger changes in this variable. Nevertheless, an indirect effect was observed through an increase in mindfulness competencies, which were found to mediate the improvements attained in both well-being and perceived stress. This finding is an important one, given the need to understand the mechanisms through which mindfulness-based interventions influence outcome variables. A growing body of evidence has suggested that one such mechanism is the enhancement of attention regulation skills, which are implicit in mindfulness (Andreu & García-Rubio, 2019; Canby et al., 2015; Chiodelli et al., 2018).

This is one of the few studies that includes group variables such as shared flow. The experience of shared flow increased significantly following the intervention, as compared to pre-intervention measures. This finding is consistent with the results reported by Pölonen et al. (2019), who found an increase in the experience of flow among a group of participants engaging in meditative movement (specifically, Qigong). Some authors have argued that without a minimum level of relaxation, people are highly unlikely to experience flow (Knierim, 2020).

Consistent with the results reported by Moore (2013) and Sinnott et al. (2020), shared flow was positively related to the *non-reactivity* mindfulness competency. *Non-Reactivity* is the ability to adapt to the present situation without distraction and, as such, constitutes a competency with a major behavioral component linked to the setting of clear goals, which in turn reduces uncertainty and stress (Hanley & Garland, 2017; Soysa & Wilcomb, 2015). This finding coincides with the conceptualization of the experience of flow in several of its dimensions, including clear goals, the merging of action and awareness, and concentration on the activity with total absorption. Indeed, one of the tools used in mindfulness techniques to avoid distraction is concentration (on breathing, on the body, or on the task at hand), without responding to any other outside stimulus.

The experience of shared flow also correlates significantly with classroom climate (engagement) and identity fusion. This result is consistent with those reported by Zumeta, Oriol, et al. (2016), who found that identity fusion predicted collective efficacy, defined as the shared perception of a group regarding their ability to complete the actions necessary to

attain certain levels of achievement, and corroborates the importance of feelings of belonging to a group in the improvement of academic performance. The emotions experienced in class affect students' motivation, commitment, and performance, which in turn influence both learning and the social climate in the classroom (Oriol et al., 2016, 2017). Better management of these group emotions in the classroom will enable students to maintain higher levels of interest in their studies and avoid the risk of dropout. Nevertheless, research into group or collective emotions in the classroom is still scarce.

The results of the present study reinforce the need to conduct further research into interpersonal and group variables, such as the relationship between classroom climate and shared flow, and its influence on stress reduction and academic performance. In addition, this work can support practical applications of shared flow; that is, helping to improve the practical realization of group flow experiences in different fields (e.g., leaders of a work group, the maestro of an orchestra, or the coach of a football team), seeking to make use of group flow in order to attain potentially positive outcomes for their respective group members.

This study reveals positive changes in the experience of shared flow in the intervention group as well as in the affiliation dimension of classroom climate. However, the mediating role of mindfulness competencies in the relationship with flow has not been confirmed. It may be that flow also plays a mediating role in the effects of mindfulness training on stress and well-being, consistently with the results reported by Zumeta, Basabe, et al. (2016) in a university sample. This is a question that requires further research.

This research has a number of limitations, which need to be taken into consideration: (a) The participants were all volunteers from a specific classroom and were recruited using a nonrandom sampling process; (b) the sizes of the intervention and control groups were not even; (c) the exclusive reliance on self-report and the fact that the number of items used to measure classroom climate was low; (d) time spent training at home was not measured; and (e) the two groups could not be compared in terms of shared flow because, due to logistical difficulties, this variable was not measured in the control group.

The current study demonstrates that even a brief mindfulness intervention can have positive effects on students' perceived stress and classroom climate. Nevertheless, more systematic and longer lasting interventions are required to produce significant changes in well-being. Future studies should strive to recruit a randomized sample and carry out follow-up measures within a longitudinal design (Kohls et al., 2019). They should also try to ensure a larger sample group. It is important to continue researching the mediating mechanisms of the effects of group mindfulness training, particularly in terms of the potentially promising role played by experiences of shared flow. Finally, it is important for future mindfulness-based educational programs to assess the social validity of the intervention (López-González et al., 2019).

University training programs should include a psycho-educational component in their educational curriculum,

designed to raise awareness of the advantages of these techniques for managing stress, fostering well-being, enhancing classroom climate, and improving students' academic performance. The results of the present study suggest that the application and inclusion of mindfulness techniques may help university students cope better with stress by developing a greater awareness of their shared internal experiences (e.g., experiences of shared flow). Teaching should become a means of working toward a "learning system" in which people collectively become better able to overcome setbacks and rise to the complex challenges of the modern world. Rather than just a tool for individual improvement, mindfulness may become a vehicle for improving critical education and fostering social change (Frank et al., 2019). The study of learning as a collective experience is therefore of the utmost importance.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (University of the Basque Country's Committee for Research with Human beings (CEISH-Ref: M10/2016/031) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The data recorded were alphanumerically coded to ensure anonymity following the Organic Law on the Protection of Personal Data (BOE-A-2018-16,673).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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