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Promoting school success through mindfulness-based interventions in early childhood☆

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ABSTRACT

This study aims to assess the effectiveness of the mindfulness-based Mindkinder programme on school adjustment, school behavioural problems, and school outcomes in Early Childhood Education students. A quasi-experimental design of repeated pretest-posttest measures with a control group is used. The participants in the study were 118 students (55.2% girls, and 44.8% boys). The age of children ranged from 5 to 6 years ($M = 5.69$, $SD = .37$). The programme is implemented during school time. The results show that the programme promotes in the experimental groups a significant improvement in some school adjustment, school behavioural problems, and school outcomes variables. These results suggest that mindfulness programmes can be effective in promoting school adjustment and improving school outcomes in childhood. The implications of these findings are discussed, and recommendations for future research are formulated.

Promoviendo el éxito escolar mediante una intervención basada en atención plena (*mindfulness*) en Educación Infantil: Programa *Mindkinder*

Palabras clave:
Atención plena
Educación infantil
Adaptación escolar
Problemas conductuales
Éxito escolar

RESUMEN

El presente estudio tiene como finalidad evaluar la eficacia del programa *Mindkinder* basado en atención plena (*mindfulness*) sobre la adaptación escolar, los problemas conductuales escolares y los resultados escolares en alumnado de Educación Infantil. Se utiliza un diseño cuasi-experimental de medidas repetidas pretest-postest con grupo de control. Los participantes en el estudio son 118 alumnos y alumnas (55.2% eran niñas y el 44.8% eran niños). El alumnado tiene de 5 a 6 años ($M = 5.69$, $DT = .37$). El programa se implementa durante las horas lectivas. Los resultados muestran que el programa estimula en los grupos experimentales una mejora significativa en algunas variables de adaptación escolar, problemas conductuales escolares y resultados escolares. Estos resultados sugieren que los programas de atención plena pueden ser eficaces en la promoción de la adaptación escolar y mejora de los resultados escolares en la infancia. Se discuten las implicaciones de estos hallazgos y se realizan recomendaciones para futuras investigaciones.

Introduction

Mindfulness, defined as a state of acceptance, reflection, and meditation in which an individual is conscious and attentive (Brown & Ryan, 2003; Kabat-Zinn, 1994) implies an active attention and awareness process with the experience of the present moment (Brown, Ryan, & Creswell, 2007). Similarly, there are two important moments in mindfulness: maintenance of immediate experience (attention self-regulation) and personal maintenance-oriented towards an attitude of curiosity, openness,

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and acceptance (active attention) (Bishop et al., 2004). Thereby, the essential elements through which said construct acted are self-regulation of attention, emotional management, perception and body awareness, and openness and self-change (Hölzel et al., 2011).

In recent decades, mindfulness is becoming exponential in research (Bakosh, Tobias Mortlock, Querstret, & Morison, 2018; Klingbeil et al., 2017). Also, some authors highlight the potential of mindfulness and its ability to increase awareness and attention in the educational context (Bakosh, Snow, Tobias, Houlihan, & Barbosa-Leiker, 2015; Brown et al., 2007; Felver, Celis-de Hoyos, Tezanos, & Singh, 2016). A healthy and balanced emotional, social and cognitive functioning in the educational context requires socio-emotional self-regulation interventions (Flook, Goldberg, Pinger, & Davidson, 2015), which positively influence learning (Barkley, 2001). Attention and executive functioning play an important role in such self-regulation, being fundamental measurers of school success, predicting academic performance beyond the general levels of intelligence (Blair & Razza, 2007; Razza, Bergen-Cico, & Raymond, 2015).

Interventions based on mindfulness (MBI: *Mindfulness-Based Interventions*) and specifically in the field of Education (MBIE: *Mindfulness-Based Interventions in Education*) (López-González, Herrero-Fernández, Amutio, Santamaría, & Van Gordon, 2019) are becoming highly relevant in research in the school context (Bakosh et al., 2015; Felver et al., 2016; Klingbeil et al., 2017). These interventions, during the early stages of life, arise to provide children with skills to manage stress and improve their socio-emotional, cognitive, and behavioural skills (Felver et al., 2016). Also, attentive and affective self-regulation in childhood predicts well-being and educational level until adulthood (Moffitt et al., 2011). Authors such as Zenner, Herrnleben-Kurz, and Walach (2014) state in their meta-analysis that MBI implemented in childhood represent an increase in their executive functions (attention and self-control) as well as their socio-emotional skills (resilience and decreased disruptive behaviour).

However, to promote the quality of these interventions, it is necessary to follow a series of recommendations (Felver et al., 2016): (1) the use of randomized studies to experimental and control conditions; (2) the explanation of the socio-economic context of the participants; (3) the identification of the nuclear components of the MBI; (4) an estimate of the quantity and quality of the preparation necessary to develop the MBI; (5) the use of multi-informative and multi-method techniques; (6) the maintenance of a record of the academic performance of the participants; and (7) the follow-up data collection. Gueldner and Feuerborn (2016) add that the development of MBI needs to be carried out in the classroom and with an established schedule (e.g., Napoli, Krech, & Holley, 2005; Schonert-Reichl & Lawlor, 2010) in addition to the inclusion of audiovisual support materials such as audio guides (Bakosh et al., 2018). On the other hand, some authors recommend evaluating participants' perceptions of the intervention, as well as the broader social context in which MBI are developed to ensure their social validity (López-González et al., 2019).

Mindfulness programmes implemented with adults are being successfully adapted in the educational field for use in adolescence and childhood (Saltzman & Goldin, 2010). MBI are perfectly suited to this educational environment, optimizing their school climate (Felver et al., 2016; Lombas et al., 2019). Likewise, these practices favor students with a positive impact on variables of emotional, psychosocial, and cognitive nature (González-Mesa & Amigo-Vázquez, 2018). Along these lines, the implementation of MBI on adolescents (Zoogman, Goldberg, Hoyt, & Miller, 2014) shows improvements and positive benefits in variables such as psychological well-being (Lombas et al., 2019); classroom climate and school aggression (Lombas et al., 2019); executive functions related to inhibition and attention (Terjestam, Bengtsson, & Jansson, 2016); cognitive processing (Beaucheim, Hutchins, & Patterson, 2008) and academic performance (Bakosh et al., 2015).

On the other hand, the implementation of the MBI also confirms a positive impact on Elementary School students in psychological variables, such as regulation and emotional control (Schonert-Reichl et al., 2015); psychological well-being (Crescentini, Capurso, Furlan, & Fabbro, 2016) and optimism (Schonert-Reichl et al., 2015); self-control capacity (Zoogman et al., 2014); executive functions such as attention (Schonert-Reichl et al., 2015; Tarrasch, Margalit-Shalom, & Berger, 2017), cognitive inhibition and flexibility (Schonert-Reichl et al., 2015), working memory (Schonert-Reichl et al., 2015), verbal and auditory memory, and concentration (Ricarte, Ros, Latorre, & Beltrán, 2015). Likewise, in line with this study, MBI also show evidence in educational variables such as academic performance concerning school achievement (Tarrasch et al., 2017); and in the curricular subject grades (Schonert-Reichl et al., 2015). In short, activation and capacity for awareness and active attention might serve as a potential driver for educational success (Bakosh et al., 2018).

However, the MBI interventions developed and evaluated with Early Childhood Education students (3–6 years) are scarce, despite the relevance of this stage in the general development of individuals and the acquisition of attention skills in particular (Sampaio-de-Carvalho, Marques-Pinto, & Marôco, 2017; Tang, Hölzel, & Posner, 2015). Bakosh et al. (2018) highlight that MBI at an early age and with a more focus on attention/concentration may be more effective than in later school stages. In this sense, the successful application of MBI during the first years of schooling reports improvements in competence and socio-emotional regulation (Flook et al., 2015); control and attention capabilities (Lim & Qu, 2017; Poehlmann-Tynan et al., 2016; Sampaio-de-Carvalho et al., 2017; Tang et al., 2015); empathy and social relationships (Flook et al., 2010); executive functions (Razza et al., 2015) related to cognitive flexibility (Flook et al., 2015), working memory and work planning (Thierry, Bryant, Nobles, & Norris, 2016). On the other hand, several studies also confirm benefits in educational variables such as improvements in academic results (Flook et al., 2015; Thierry et al., 2016).

Thereby, the implementation and evaluation of the *Mindkinder* programme (Moreno-Gómez & Cejudo, 2019) is an interesting experience in Early Childhood Education students. The *Mindkinder* programme is designed as a collective psychoeducational intervention from the approach suggested by Feagans-Gould, Dariotis, Greenberg, and Mendelson (2016). It is structured in four blocks of content: (a) audio-guided meditations; (b) visualizations; (c) use of mandalas; and (d) corporal expression. The results show an improvement in psychosocial adjustment, specifically in the indicators of externalizing problems, explicitly in the decrease of hyperactive and aggressive behaviours; and internalizing problems specifically decreased anxiety; a significant decrease in academic problems and in general a significant reduction in behavioural problems (Moreno-Gómez & Cejudo, 2019). Also, the results show improvements in the global index of neuropsychological maturity, specifically in visual perception, nonverbal development, and attention (Moreno-Gómez & Cejudo, 2019).

According to the above, the objective of the current study is to evaluate the impact of the Mindfulness-based "*Mindkinder*" programme in Early Childhood Education students on the following variables: (1) school adaptation; (2) school behaviour problems; and (3) academic results. The hypotheses focus on the fact that such programme (*Mindkinder*) will improve school adaptation (Hypothesis 1), school behavioural problems (Hypothesis 2), and school outcomes (Hypothesis 3) in the participants.

Table 1
Sample description

		Experimental group		Control group	
		n	%	*n*	%
Gender	Boys	33	43.42	16	42.11
	Girls	43	56.58	22	57.89
Age	5 years	55	72.37	27	71.05
	6 years	21	27.53	11	28.95

Note. Experimental $n = 76$; Control $n = 38$.

Table 2
Reliability evidence

	α	FC	VME	Ω
SPECI				
Externalizing Problems	.91	.87	.762	.92
Attention-Hyperactivity	.79	.77	.555	.84
Disturbing Behaviour	.80	.79	.610	.81
Academic Performance Difficulties	.88	.84	.598	.79
Violent Behaviour	.82	.78	.609	.80

Note. α: Cronbach's Alpha, FC: Compound Reliability, VME: Average Variance Extracted, Ω: McDonald's Omega Index.

Method

Participants

The sample was obtained through a non-probabilistic incidental sampling method and is made up of 118 students of Early Childhood Education (ECE) between the ages of 5 and 6 years old ($M = 5.69$, $SD = .37$). Students are randomly assigned to the experimental group ($n = 76$, 66.6%) or the control group ($n = 38$, 33.4%). Regarding the distribution by gender, 51 (44.8%) are boys and 63 (55.2%) are girls. Age differences in both conditions (experimental group and control group) are not significant, $\chi 2 = 1.04$, $p > .05$. Similarly, differences based on gender in both conditions (experimental group and control group) are not significant, $\chi 2 = 1.12$, $p > .05$ (see Table 1).

The criteria for inclusion ($n = 114$) in the study are: (a) regular school attendance and (b) written informed consent from the parents (or legal guardian). The exclusion criteria ($n = 4$) are (a) students with more than 30% scholar absenteeism and (b) not presenting the written informed consent from the parents (or legal guardian).

The sample belongs to a concerted educational center located in an urban environment, with a medium socioeconomic level. As for the teaching staff participating in the study, the experimental group is formed by four teachers, and the control group by two teachers. All teachers are from Early Childhood Education.

Instruments

In the current study, instruments with adequate evidence of internal consistency are used (see Table 2). All instruments are filled in by the teachers.

To evaluate the school adaptation variable, the *Behavior Assessment System for Children*, second edition (BASC-2; Reynolds & Kamphaus, 2004) is used, which assesses students' socio-school adaptation. Specifically, the assessment questionnaire for teachers (BASC-T2) is used, which consists of 149 items that describe behaviours that can be observed in students. The items are presented on a four-point Likert format scale (a = never, b = sometimes, c = often, d = almost always). Instructions ask the teacher to choose the answer that best describes how students have behaved during the last six months. BASC-T2 reports on five global scales or composite indices. In the current study, only the *School Problems scale* (SP) is used. This scale, consisting of 25 items, is calculated from the grouping of several simple scales (subscales): *attention problems* (16 items) and *learning problems* (9 items). The Spanish version we used has shown satisfactory psychometric properties (González, Fernández, Pérez, & Santamaría, 2004).

To evaluate school behaviour problems, the SPECI "*Screening of Emotional Problems and Child Behaviour*" (Garaigordobil & Maganto, 2014), is used, which is developed to identify problematic behaviours in early childhood. Its structure has two subscales: *internalizing problems* (6 items) and *externalizing problems* (4 items). It consists of 10 items. Each behavioural problem category is assessed with a Likert scale from 0 to 2 depending on the intensity (none, some, a lot). In this study, only the *subscale of externalizing problems* has been used due to its relationship with the school context. This subscale that focuses on school behaviour problems is composed of the following dimensions: *disruptive behaviours, lack of attention and symptoms of hyperactivity, academic performance problems, and violent behaviour*.

Regarding school outcomes, they are obtained through the average grade of the participating students in each of the areas of Kindergarten with a rubric following the evaluation criteria established in each of the didactic units: (1) *self-knowledge and personal autonomy*; (2) *environmental knowledge*; (3) *languages: communication and representation*. This average grade is calculated based on the overall results of the first evaluation (*pretest*) and those obtained in the third evaluation (*posttest*). School outcomes are operationalized using a Likert scale from 1 to 6 (1 = not achieved, 6 = fully achieved).

Table 3
Internalization of mindfulness routines sessions

Sessions	Time	Activity	Time	Activity
Day 1	9'15–9'30	Meditation	15'10–15'25	Visualization
Day 2	9'15–9'30	Meditation	15'10–15'25	Mindfulness
Day 3	9'15–9'30	Meditation	15'10–15'25	Body awareness

Procedure

The research follows a quasi-experimental design with repeated pretest-posttest measures with a control group. The research project, following the Declaration of Helsinki on human experimentation, has been carried out following the postulates of the University's Code of Ethics. Authorization to the Management Team, School Board and Cloister of the participating center is formally required for the implementation of the programme. Likewise, informed consent is requested from the students' legal representatives, and all ethical standards are met: written informed consent; right to information, protection of personal data and confidentiality, and educational inclusion (non-discrimination).

Intervention programme

First, prior to the implementation of the programme, internalization sessions and initiation of mindfulness routines are applied (see Table 3). This autonomy facilitates a better efficiency in achieving subsequent activities that will be of greater complexity (according to the ages of participants) (Zabalza, 1996).

The *Mindkinder* programme (Moreno-Gómez & Cejudo, 2019) is implemented in an educational environment during school hours by the teachers of each group (optimizing their ecological validity). The teachers develop the programme at the school, weekly, and with the support of an expert and external instructor (Greenberg & Harris, 2012; Meiklejohn et al., 2012). Thereby, the intervention (see Table 4) is organized through four components: (1) Audio-guided meditations according to the works of Bakosh et al. (2015,

Table 4
Sequencing of content, theme and sessions in the Mindkinder programme

Content blocks	Sessions	Theme/Activity	Learning
Meditation and Mindfulness (audio guide)	3	Introduction	- Preparation of postural meditation/mindfulness routines.
	10	Breathing and relaxation	- Self-regulation strategies for concentration and relaxation with breathing.
	10	My body and me	- Postural hygiene and awareness of the different body parts.
	10	My thoughts	- Differentiation and knowledge of feelings and thoughts.
	10	How I feel?	- Identification and denomination of feelings. - Development of attention as a positive resource to manage negative feelings.
	10	Contemplation	- Interiorization and concentration in positive and friendly attitudes.
Visualization	20	Creativity and imagination	- Dynamization of attention and listening to creative thinking, imagination.
Mandalas	20	Mindfulness	- Optimization of the concentration; improvement of fine motor skills, living standards (respect and solidarity)
Body Awareness	20	Corporal expression	- Social interaction; positive interdependence; body awareness and calm promotion.

2018) and Kabat-Zinn (2003); (2) visualizations, using students' imagination and their ability to abstract visualization (Gueldner & Feuerborn, 2016); (3) development of pedagogical and concentration dynamics using *mandalas* (Carsley, Heath, & Fajnerova, 2015); and, (4) corporal expression: student body awareness activities both individually and in groups (Poehlmann-Tynan et al., 2016).

The *Mindkinder* programme has a duration of 6 months (Moreno-Gómez & Cejudo, 2019), following the procedural indications of the activities included in the programme (Garaigordobil, 2000). This intervention also maintains the following requirements during its implementation: (a) consistency between sessions: the programme includes six weekly sessions of 15 minutes each (144 sessions); (b) temporal consistency: the sessions are scheduled at the same time each week and are held in the same place; (c) teaching consistency: interventions are always leaded by a kindergarten teacher with the assistance of an expert-external instructor; and (d) organizational and structural consistency (for each session).

The sessions are applied at the beginning of the classes in different shifts (first thing in the morning and afternoon). The sessions of the experimental groups are directed by four teachers of the Kindergarten groups-classrooms with the support of digital resources (audio-guide with all the elements to develop the sessions) and an external advisor of the research team. The external advisor has a 15-year professional background as teacher training at MBI (specialist teachers). In line with other research (Bakosh et al., 2015, 2018) a training course for teachers on mindfulness techniques and recommendations to implement the programme is carried out. This training course takes place in four weeks, with a total length of 12 hours. The course is taught by the research team coordinated by the external advisor. After the development of the *Mindkinder* programme and due to the interest and involvement of the families of the participating students, a training course is designed and carried out in the context of a parent's school. The contents focus on learning mindfulness techniques for use in the family environment.

Data analysis

The data is analyzed with the statistical software SPSS 24.0 (®IBM, 2016). First, we proceed to analyze the homogeneity of the sample through a multivariate analysis of variance (MANOVA) in the pretest measures of the dependent variables. Secondly, to determine the effect of the programme, descriptive (mean and standard deviations) and variance (ANOVA) analyzes are performed with each of the scores obtained in the instruments used in the pretest phase. Third, descriptive analyzes (means and standard deviations) and multivariate analysis of covariance (MANCOVA) are carried out to assess the impact of the programme. The variables dependent on the study are the values of the variables in the posttest, while the covariables are the values of the variables, but in the pretest. Finally, descriptive and covariance analyzes (ANCOVA) of the posttest scores are carried out, in order to analyze the impact of the programme on each of the variables. Finally, the effect size is analyzed (Partial Square Eta: η^2) (*negligible* $0 \leq \eta^2 \leq .009$; *small* $.01 \leq \eta^2 \leq .089$; *medium* $.09 \leq \eta^2 \leq .249$; *large* $\eta^2 \geq .25$) according the criteria set out by Tabachnick and Fidell (2007).

Results

The results of the effects of the programme on the variables studied are presented in Table 5.

Programme effects

MANOVA results, before the intervention, show no statistically significant differences between the experimental and control groups, Wilks' Lambda, $\Lambda = .571$, $F\,(5, 108) = .739$, $p = .333$, with a small effect size ($\eta^2 = .062$, $r = .11$). The results of the MANCOVA show significant differences between the experimental and control groups, Wilks' Lambda, $\Lambda = .899$, $F\,(5, 108) = 5.295$, $p = .003$, with a medium effect size ($\eta^2 = .267$, $r = .32$).

Effects on school adaptation

The results of ANOVA in the pretest phase (Table 5) suggest that there are no significant differences between experimental and control groups. After performing the ANCOVA in the posttest phase (Table 5), the results confirm a significant decrease in favor of the experimental group in *school problems*, with a medium effect size ($\eta^2 = .094$); *attention problems*, with a small effect size ($\eta^2 = .053$) and *learning problems*, with a small effect size ($\eta^2 = .041$).

Effects on school behaviour problems (externalizing problems)

The results of ANOVA in the pretest phase (Table 5) show that there are no significant differences between experimental and control groups. After performing the ANCOVA in the posttest phase (Table 5), the results show a significant decrease in favor of the experimental group in *attention and hyperactivity problems*, with a small effect size ($\eta^2 = .072$) and *difficulties in academic performance* with a small effect size ($\eta^2 = .081$).

Effects on school outcomes

The results of ANOVA in the pretest phase (Table 5) confirm that before starting the programme there are no significant differences between the experimental and control groups. However, the results of the ANCOVA in the posttest phase (Table 5) show significant improvements, in favor of the experimental group in the area of *self-knowledge* and *personal autonomy*, with a medium effect size ($\eta^2 = .109$).

Table 5
Means and standard deviations of the pretest and posttest phases in the experimental and control group; analysis of variance (ANOVA); covariance analysis (ANCOVA) and partial square eta (n2) in the variables: school adaptation, school behaviour problems, and school outcomes

	PRETEST				ANOVA			POSTEST				ANCOVA		
	Experimental		Control		Experimental			Control						
	M	*SD*	*M*	*SD*	*F*	*p*	η^2	*M*	*SD*	*M*	*SD*	*F*	*p*	η^2
School Adaptation														
School problems	112.17	27.02	111.28	21.01	.532	.246	.004	110.76	24.18	116.19	21.08	2.437	.010	.082
Attention problems	10.98	6.27	9.84	4.58	1.741	.873	.001	9.93	4.94	9.91	4.28	1.987	.014	.053
Learning problems	10.78	7.24	8.00	4.91	1.543	.741	.002	9.14	7.08	8.13	4.58	2.814	.011	.041
School Behaviour Problems														
Externalizing problems	.21	.92	.23	.90	.734	.777	.003	.20	.91	.24	.87	.268	.435	.004
Attention-hyperactivity	.13	.32	.12	.38	.842	.241	.002	.10	.28	.13	.31	1.573	.034	.072
Disturbing behaviour	.09	.36	.10	.31	.984	.325	.003	.10	.39	.11	.32	.426	.987	.003
Violent behaviour	.07	.24	.08	.23	.214	.211	.004	.07	.28	.09	.24	.714	.445	.003
School Outcomes														
Self-knowledge and personal autonomy	4.18	.68	3.99	.19	1.996	.162	.026	4.87	.61	4.34	.76	9.073	.004	.109
Environmental knowledge	5.09	.26	5.01	.24	1.637	.205	.021	5.57	.39	5.53	.31	.922	.153	.006
Languages: communication and representation	4.60	.84	4.61	.26	.436	.218	.017	5.43	.66	5.42	.36	.569	.187	.002

Note. M: mean, SD: standard deviation, η^2: effect size (Partial Square Eta).

Discussion

The current study evaluates the effect of the Mindkinder-based programme on the variables of school adaptation, school behaviour problems (externalizing problems), and school outcomes in child school students (4–6 years) of a school.

The results show statistically significant improvements among students who participate in the *Mindkinder* programme compared to students who do not participate. The effects of the *Mindkinder* programme can be summarized as: (1) significant improvement in school adaptation; (2) significant improvement in some indicators of school behavioural problems (externalizing problems); (3) significant increase in the average rating of the area of self-knowledge and personal autonomy. However, as regards school behavioural problems, there are no significant declines in school behaviour problems or externalizing problems: disruptive behaviour and violent behaviour. Also, concerning school outcomes, no significant improvements are obtained in the area of environmental knowledge and the area of languages: communication and representation.

First, the results show improvements in school adaptation. Therefore, Hypothesis 1 is confirmed. The findings are consistent with those found in other studies that demonstrate the effectiveness of MBI in improving school adaptation in children in Early Childhood Education (3–6 years) (Lim & Qu, 2017; Moreno-Gómez & Cejudo, 2019; Poehlmann-Tynan et al., 2016; Razza et al., 2015; Sampaio-de-Carvalho et al., 2017; Tang et al., 2015). Thereby, the effect size of the subscales (attention problems and learning problems) is small. However, the effect size of the global scale or composite index (school problems) is medium. Similarly, the results point in the same direction as those obtained with Elementary Education students (Beaucheim et al., 2008; Ricarte et al., 2015; Schonert-Reichl et al., 2015; Tarrasch et al., 2017; Terjestam et al., 2016; Zenner et al., 2014). It is likely that this similarity between the results obtained in Early Childhood Education and Elementary Education may be due to the positive impact of MBI on social and emotional development in students and, therefore, facilitate school adaptation processes (Flook et al., 2015).

Regarding school behaviour problems or externalizing problems, the results show improvements in some indicators. Therefore, Hypothesis 2 is partially confirmed. These findings are consistent with those found with Early Childhood Education students (Flook et al., 2010, 2015; Moreno-Gómez & Cejudo, 2019; Poehlmann-Tynan et al., 2016; Razza et al., 2015; Zenner et al., 2014). However, it is necessary to highlight that the effect size obtained is small, although in line with those found in similar studies (Moreno-Gómez & Cejudo, 2019; Poehlmann-Tynan et al., 2016). One possible explanation may be that the implementation of the *Mindkinder* programme and its effective application of the mindfulness techniques learned improve self-control (Lim & Qu, 2017; Poehlmann-Tynan et al., 2016; Sampaio-de-Carvalho et al., 2017; Tang et al., 2015) and self-regulation in the school context (Razza et al., 2015), decreasing hyperactivity, attention deficit and academic problems, which ultimately leads to a decrease in behaviour problems of children in the school context (Moreno-Gómez & Cejudo, 2019), in agreement to various authors who claim that MBI in the school context might reduce a variety of behavioural problems in students (Davis, 2012; Felver et al., 2016; Renshaw, 2012; Renshaw, Bolognino, Fletcher, & Long, 2015; Renshaw & O'Malley, 2014).

Concerning school outcomes, the findings confirm an improvement in the area of self-knowledge and personal autonomy, with a medium effect size, in line with those obtained in students of Early Childhood Education (Flook et al., 2015; Thierry et al., 2016). In congruence with some authors (e.g., Beaucheim et al., 2008; Moreno-Gómez & Cejudo, 2019; Razza et al., 2015) there is likely a positive impact of MBI on cognitive development, driving benefits in achieving school or academic performance at an early age (4–6 years). Another possible explanation of these results focuses on the close relationship between the nuclear objectives of the MBI and specifically the *Mindkinder* programme, and the curricular objectives and contents of this area, which are related to the gradual construction of self-concept and self-esteem. Also, it focuses on intrapersonal skills, such as the recognition of their own emotions, emotional and behavioural self-regulation, or the promotion of emotional well-being. These self-regulation skills are increasingly recognized as variables that affect school success (Flook et al., 2015).

The current research has some limitations. First of all, it is necessary to carry out an initial evaluation that guarantees the social validity and acceptance of the programme by the students and teachers (López-González et al., 2019), as well as a follow-up evaluation to more rigorously evaluate the effects of the programme. Second, the results focus solely on teachers' perceptions of student

behaviour (BASC-T2 and SPECI), so it will be necessary to collect observations in the family environment. Third, the current study is limited by the relatively small sample size and the difficulty of having equivalent samples between the experimental and control groups. Larger and equivalent samples are needed to generalize the results. Fourth, it is necessary to deepen the practice of teachers, in order to ensure that they have particular generic and experiential professional competences before becoming mindfulness instructors (Arthurson, 2015; Crane et al., 2012; Modrego-Alarcón et al., 2016). Finally, it is necessary to point out that not all general recommendations can be followed to guarantee the quality of MBI (Felver et al., 2016). Thereby, the evaluation of the MBI has some difficulties in the school context, such as, for example, difficulty in the random assignment of participants and the use of active control conditions. Future research could focus on the effect of the *Mindkinder* programme on other variables, such as classroom climate, interpersonal relationships, or psychological well-being.

In conclusion, the results of this study suggest that the implementation of the *Mindkinder* programme in Early Childhood Education students can improve school adaptation, school behaviour problems, and school outcomes. On the other hand, the current research enriches the existing scientific literature demonstrating that MBI can be viable and appropriate intervention strategies to be developed in the educational context in order to contribute to the integral development of the student personality (Felver et al., 2016).

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