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Preventive Initiatives to Promote Psychological Adjustment Among Primary Students: Findings of RULER Approach in Spanish Public Schools

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Abstract

Mental health during childhood is a growing social challenge with important implications for optimal development. Social and Emotional Learning (SEL) interventions have been shown to prevent problems related to psychological maladjustment, as well as promote emotional well-being. This article aims to provide evidence for the impact of RULER (Recognizing, Understanding, Labeling, Expressing, Regulating), an evidence-based approach to SEL, on students' mental health outcomes in Spanish public schools. A total of 207 primary school students (50.24% girls, mean age of 9 years) participated in the study. The teachers in the intervention school as compared to the control school received RULER instruction consisting of 15 hours of professional development training, 3 hours of follow-up, and SEL implementation guidelines throughout the school year. Students completed the Behavior Assessment System (BASC S-2). Results showed significant impacts in the RULER as compared to control school, including a reduction of clinical symptoms, such as anxiety and atypicality, as well as emotional symptoms, such as the sense of inadequacy among 9 to 12 year old students. Implications of these findings are discussed.

Keywords: psychological adjustment, childhood, social and emotional learning, school-based intervention, emotional intelligence

Iniciativas Preventivas para Promover el Ajuste Psicológico en Estudiantes de Primaria: Resultados del Método RULER en Colegios Públicos Españoles

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Resumen

La salud mental en la infancia es un problema social creciente con importantes implicaciones para su óptimo desarrollo. Se ha demostrado que las intervenciones en educación social y emocional previenen problemas relacionados con el desajuste psicológico, así como, promueven el bienestar. Este artículo tiene como objetivo proporcionar evidencia del impacto de RULER, un enfoque de educación social y emocional basado en evidencia, en variables relacionadas con la salud mental de estudiantes de escuelas públicas españolas. Participaron un total de 207 alumnos de Primaria (50,24% niñas, edad media 9 años). El profesorado del colegio experimental recibió la intervención RULER que consistió en una formación centrada en desarrollo profesional docente de 15 horas, más 3 horas de seguimiento y plan de implementación de las herramientas SEL durante todo el año escolar. Los estudiantes completaron el Sistema de Evaluación de la Conducta (BASC S-2). Los resultados mostraron una reducción de los síntomas clínicos, tales como la ansiedad y la atipicidad, así como el índice de síntomas emocionales, como el sentido de incapacidad, entre los estudiantes de 9 a 12 años, en comparación con los estudiantes cuyos profesores no recibieron la formación SEL. Se discuten las implicaciones de estos hallazgos.

Palabras clave: ajuste psicológico, infancia, educación socioemocional, intervención educativa, inteligencia emocional

Middle to later childhood, specifically the developmental period between ages 6 and 12 years, is crucial, in that it can be an optimal time or, on the contrary, a precarious one for the acquisition of the abilities that lead to psychological adjustment and wellbeing. This developmental stage is critical for the maturation of cerebral structures, which are fundamental for cognitive, emotional, and social development. A sequential increase in frontal lobe activity occurs, facilitating self-regulation, greater receptiveness to emotional states, increased tolerance for unpleasant emotions, and greater complexity of emotional experiences. The ability to verbally express feelings and the capacity to institute strategies to conceal one's emotional state develop progressively (Saarni, 1999). In addition, the continued maturation of the prefrontal cortex impacts the progressive acquisition of self-control and emotional regulation, such as reevaluation during a stage when one's first difficulties and challenges must be addressed (McRae et al., 2012; Siegel, 2014; Walker, 2002).

Mental Health Across Development of Childhood

Late childhood and adolescence become fundamental moments to lay the foundation for health socio-emotional development and the prevention of psychological maladjustment (Burns & Gottschalk, 2019; Kessler et al., 2007). Half of all mood disorders diagnosed in adulthood manifest symptoms at around 14 years old, though the symptoms are often neither recognized nor treated until later, which impacts future quality of life (World Health Organization, 2014). About 20% of children suffer from mental health problems (UNICEF, 2019). Mental health problems can have an impact in children's emotional healthy development, as well as school adaptation, responsible decisions and optimal social interactions which could also affect future adult functioning. Notably, mood disorders are the primary cause of disability between the ages of 10 and 19, and suicide is the third most common cause of death during adolescence (World Health Organization, 2014). Between the ages of 12 and 19, a distinctive increase of mental health problems in developed countries is noted; the most prevalent include substance abuse, anxiety, and depression (Choi, 2018). In particular, anxiety disorders have a prevalence of 12.3% between the ages of 6 and 12 years and

11.0% between the ages of 13 to 18 years (Costello et al., 2011). In addition, in a very recent report developed by Save the children, results also corroborated the prevalence of mental health disorders is higher from 11 to 14 years old, comparing to 4 to 10 years old. These results also concur with data reporting the increasing prevalence of mental health issues after the pandemic situation (Aumaitre et al., 2021). Research also shows some gender differences in anxiety and depression. These gender differences seem to be linked to a tendency of lower levels of life satisfaction among girls, across different cultures. Contributing factors include the establishment of higher academic goals and self-perception of coping skills (WHO, 2016).

The Impact of COVID-19 on Children Mental Health

Now, more than ever, children mental health is a common problem worldwide. The increase of problems related to psychological maladjustment due to COVID-19 have been recently documented. Research shows an increase of mental health problems related to depression, anxiety, attachment/dependence issues, post-traumatic stress disorder, and emotional symptoms, such as irritability or sleep disruptions (Aumaitre et al., 2021; Brooks et al., 2020; Racine et al., 2020). Additionally, confinement and its associated stress since the beginning of the pandemic have exacerbated mental health problems. One study found that 86% of families reported changes in the emotional state of their children, such as irritability, agitation, nervousness, changes in sleep, or difficulty concentrating (Orgilies et al., 2020).

Despite clinical initiatives to address the growing prevalence of problems associated with psychological maladjustment, the educational context is unique because not only is learning taking place, but it is also an environment where students develop socially and emotionally. A report issued by UNESCO, which establishes the framework of Education for Sustainable Development 2030, points to education as the principle contributing factor to the construction of a more just and equal society through five main areas, including student empowerment as well as training and professional development of educators (UNESCO, 2020).

Social and Emotional Learning to Promote Mental Health in Educational Settings

The implementation of educational practices based on the promotion of socio-emotional skills and abilities through instruction and activities built into the curriculum is vital to fostering wellbeing and healthy development in childhood, especially for children at risk. Research shows that early intervention helps to reduce inequality and promote healthy growth from an early age (OECD, 2015; Yang et al., 2019). Numerous investigations have shown the role that teaching children socio-emotional abilities has in academic and personal development. Specifically, these abilities are related to better mental health, greater social competence, and improvements in both academic and professional performance from youth to adulthood (Mayer et al., 2008; Taylor et al., 2017). Hence, the benefits of Social and Emotional Learning (SEL) is accumulating, including not only for the promotion of specific techniques to prevent psychosocial maladjustment, but also to enhance wellbeing for all stakeholders in the educational community.

Many SEL initiatives are based on the theoretical framework of emotional intelligence, defined as “the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others” (Mayer & Salovey, 1997). SEL promotes the understanding, attitudes, and abilities related to recognizing, understanding, labeling, expressing, and regulating emotions (Brackett, 2019). These underlying emotion skills help to optimize and promoting healthy self-awareness, empathy, self-management, responsible decision making, and social relationships (Durlak et al., 2011). SEL provides a framework for schools to systematically develop social and emotional competencies of children and adults, attending to their growing and changing needs (Taylor et al., 2017).

Notably, throughout the last ten years, the methodological quality and understanding of necessary characteristics of SEL have increased significantly to ensure rigor and quality in its implementation. The Collaborative for Academic, Social, and Emotional Learning (CASEL) focuses its academic and scientific resources on adequate conceptualization and establishment of a curriculum intended to promote SEL competencies and optimal academic performance of all students (MacCann et al., 2020). CASEL’s efforts revolve

around defining the programs and tools backed by scientific endorsement, as well as their adequate implementation and sustainability.

There is ample scientific evidence to confirm the effectiveness of SEL in decreasing disruptive and aggressive behaviors, enhancing classroom environment and quality of interactions, and reducing problems related to psychological maladjustment, such as depression and substance abuse (Durlak et al., 2011). Compared to classroom that did not receive SEL training, evidence has shown that those which did had a reduction of clinical manifestations such as anxiety, depression, and social stress. Furthermore, not only were emotional symptoms reduced in the short-term, but the effects continued to be evident six months later (Ruiz-Aranda et al., 2012). SEL initiatives have also been shown to impact prosocial behavior and reduce direct aggression (Castillo-Gualda et al., 2013). Similarly, the results show that SEL tools play an important role in the management of unpleasant emotions, providing students with the ability to adequately recognize, understand, and regulate these emotions, which leads to the reduction of more reactive or impulsive strategies, such as aggressive behaviors (Castillo-Gualda et al., 2018; Vega et al., 2021).

The RULER Approach to Social and Emotional Learning

One SEL initiative with accumulating empirical evidence at an international level is RULER (Brackett, 2019; Brackett et al., 2019), which is found within the SElect criteria established by CASEL that was created to determine which SEL initiatives comply with the criteria of rigor and methodological quality. RULER is a systemic approach based on emotional intelligence theory (Mayer & Salovey, 1997). RULER provides a series of tools to the entire educational community (educators, administration staff, families, and students alike) to promote the development of five emotion skills: recognizing, understanding, labeling, expressing, and regulating one's own emotions as well as those of others. RULER uses scientifically endorsed tools that strive for a common vocabulary and its integration to the educational blueprint and culture. RULER's theory of change is primarily based on the training of adults, the inclusion of RULER skills in school culture, integration of its tools in pedagogy, and subsequently, specific coursework with lessons included in curriculum content and adapted to students' development, as well as training

for families (Brackett et al., 2019). In RULER, the pathway to student development is adult intervention, ensuring that the culture and climate in a school allows for and provides the conditions for the development of both children's and adults' socio-emotional skills.

Among many goals, the integration of RULER tools and lessons in academic institutions aims to reduce negative attitudes toward classmates and school. Students in RULER classrooms show higher levels of academic performance, perspective-taking skills, and problem-solving skills in addition to a greater ability to understand, express, and regulate their emotions, compared to students in control conditions. Students in RULER classrooms also show improved levels of psychological adjustment and significantly fewer difficulties in school (Brackett et al., 2012). Schools that implement RULER tools into their curriculum show improvements in classroom emotional climate and teacher instructional skills and classroom organization, as well as closer relationships and better discipline, as compared to the control classrooms (Hagelskamp et al., 2013). Furthermore, RULER has also shown its efficacy in Spanish-speaking populations, specifically in the integration of RULER initiatives by teaching staff of junior and senior high schools, which showed improvement in numerous variables related to classroom environment, such as relationship quality, student autonomy, respect for diversity, discipline, teaching quality, and student support (Baumsteiger et al., 2021). These results corroborated the effectiveness of RULER on classroom environment and the emotional support that students receive, which was reported in a randomized controlled trial (Rivers et al., 2013).

Together, these results have important implications because teaching staff can promote an optimal classroom environment (or not), which is associated with increased wellbeing and mental health of students, as well as fewer behaviour problems and instances of anxiety or depression (Jennings & Greenberg, 2009). In addition, the benefits of RULER have not only been demonstrated with children and adolescents, but for adults, too, including reduced burnout and stress related to work, improved teacher satisfaction and commitment, and the development of emotion-related skills (Castillo-Gualda et al., 2013; Castillo-Gualda et al., 2017; Castillo-Gualda et al., 2019; Eisenberg et al., 2010; Kurki et al., 2016). Therefore, developing emotional skills in adults seems to be key for the promotion of co-regulation and to better prepare to attend to students' personal needs.

Materials and Methods

Hypothesis of the Present Study

The objective of the present study was to examine the impact of RULER, an empirically validated SEL intervention, on variables related to children's mental health, specifically among children between the ages of 6 to 12 years. Based on the literature, we hypothesize that

- 1) RULER intervention promotes mental health and psychological adjustment by reducing levels of clinical, educational, and emotional maladjustment in Primary school students.
- 2) According to literature documenting differences in emotional adjustment across childhood development. We hypothesized that the impact of the SEL intervention is significantly greater during late childhood, between 10 and 12 years, in comparison with younger students from 6 to 9 years.

Procedure

This study was developed with an ex post facto design, with a principal analysis aimed to evaluate if RULER training for teaching staff promoted mental health and psychological adjustment in primary school students in comparison with students whose teachers did not receive the training. RULER project took place in three phases through three consecutive academic years: (1) Phase one: during the first year, 4 in-person training sessions (15 hours) focused on RULER abilities and the four tools (Charter, Mood Meter, Meta-Moment, and Blueprint) for teachers; (2) Phase two: during the second year, implementation and follow-up plan (3 hours) took place to introduce skills and lessons to students; (3) Phase three: during the third year, the Behavior Assessment System for Children, Second Edition (BASC S-2) questionnaire was used to evaluate the students (Reynolds and Kamphaus, 2004, adapted by González et al., 2004).

The research group made a formal proposal of RULER Approach to SEL to the Government of La Rioja (Spain). The proposal was approved as an Educational Innovation Project, conducted by the Center of Innovation and

Education from La Rioja. Two official announcements during two consecutive academic years were made for public schools to apply. One school participated in the first year, and other nine schools participated in the second year. From all of them, two schools were contacted by the research group to participate in the present study. The school that participated during the first official announcement was considered experimental school because at the moment of evaluation teachers were already trained in RULER and started RULER implementation (phase two). The experimental school is a public school of Early Childhood and Primary Education. It is a school characterized by the principle of coeducation and normalization and integration of students with special educational needs. They implement the project VIDA with RULER Approach. The control school was selected from the nine participating schools during the second official announcement according to several characteristics such as proximity, strategic mission of schools and socio-cultural families' characteristics. Control school is a public school of Early Childhood and Primary Education. The educational project is based on six basic core elements: Bilingualism, Project Work, Co-education, Library, Sports and Well-being, and Coexistence. This school was considered as a control group assigned as "waiting list" procedure since, at the time of the evaluation, teachers have not started RULER implementation yet. Experimental and Control schools are situated within the same population, about five kilometers of distance. Their curricula were based upon very similar methodological models, predicated upon project-based learning and based on equality and innovation. Both institutions were chosen with shared characteristics in mind, such as socio-economic level and socio-cultural qualities of the student body.

Intervention

The present intervention with RULER Approach to SEL is an evidence-based approach grounded on emotional intelligence theory (Mayer and Salovey, 1997), aimed to promote five set of skills: Recognize our own emotions and those of others in facial expressions, body language, vocal tones, nonverbal signals and thinking patterns; Understand causes and consequences of feelings; Label our emotions with accurate vocabulary; Express our feelings in accordance with cultural norms and social contexts; and Regulate our

emotions by using helpful strategies to promote optimal growth and wellbeing. The RULER training provides a) teaching staff development of recognition, understanding, labelling, expressing, and regulation of emotions with the objective of improving the teaching-learning process and promoting an optimal environment; b) promoting adults' social and emotional skills to encourage professional development and incorporation into their pedagogy; and c) constructing and solidifying the understanding necessary to integrate RULER tools into educational curriculum. A full description of RULER tools, theory of change and strategy is described elsewhere (Brackett et al., 2019).

Participants

The sample for this study consisted of 207 children from two public Primary schools, located in Spain. The sample was distributed by 49.76% boys and 50.24% girls. Students were between the ages of 6-12 years (Mean = 9.21, SD = 1.59). Children from both schools completed a questionnaire, and their families signed an informed consent. The decision to participate was voluntary and anonymity and confidentiality were guaranteed regarding to data collection and processing. The study was carried out according to the Declaration of Helsinki. A total of 131 students were randomly selected in the experimental school and 76 students were randomly selected in the control school. The difference in sample size between schools was due to larger size of experimental school with a whole sample of approximately 680 students (3 groups for each grade). In comparison to control school with a total of approximately 400 students (2 groups for each grade). The initial sample consisted of 214 subjects, from which 7 were excluded due to reliability issues in their answers. In order to supplement the analyses, the sample was categorized, see Table 1, and differentiated according to gender and age, splitting into two groups ages 6-9 years (middle childhood) and 10-12 years (late childhood).

Instruments

The present study utilized the Behavior Assessment System for Children, Second Edition (BASC-2), an adaptation of the original version form 1992, modified to its Spanish version (González et al., 2004). The BASC is a multidimensional test that measures several aspects of behavior and

personality, including dimensions of psychological adjustment (adaptive) as well as maladjustment (clinical). The self-report provides information regarding the total score and regarding two scales:

- The clinical scale (negative attitude toward school, negative attitude toward teachers, sensation seeking, atypicality, locus of control, somatization, social stress, anxiety, depression, and sense of inadequacy).

- The adaptive scale (interpersonal relationships, relationships with parents, self-esteem, and self-confidence).

Similarly, this test allows for the procurement of four global dimensions: *maladjustment to school, clinical maladjustment, emotional symptoms index, and personal adjustment*; and 12 subdimensions: *negative attitude toward school, anxiety, negative attitude toward professors, atypicality, self-esteem, conduct problems, depression, social stress, locus of control, interpersonal relationships, relationships with parents, and sense of inadequacy*.

The Spanish adaptation of the test, in similar age groups, presents adequate psychometric properties. Regarding reliability, the internal consistency coefficient as well as the stability over three months elapsed time are elevated for all the global scales, specifically, .85 and .81 for maladjustment to school, .90 and .69 for clinical maladjustment, and .84 and .77 for personal adjustment (González et al., 2004). For this study, Cronbach's alpha reliability coefficient for internal consistency is greater than .80 for all the items analyzed.

Data Analysis

Data analysis was completed using the statistical package SPSS (version 25.0). Initially, we completed a descriptive analysis of the sample and calculated the mean score and standard deviation of the scales used. Later, an analysis of variance (ANOVA) was utilized to determine the possible differences in the dimensions and subdimensions by participation of the teaching staff in the training. There is no post hoc comparisons, since there were only two groups (yes/no teaching staff participation in the training) in the ANOVA.

Results

The descriptive statistics (mean and SD) of the items are shown in Table 2, of the sample in general, and differentiated by middle childhood (6-9 years) and late childhood (10-12 years).

Table 1

Sample distribution by treatment, age, and gender

Group	Gender	10-12 years	6-9 years	Total
Control	Female	12	29	41
	Male	9	26	35
	Total	21	55	76
Experimental	Female	34	29	63
	Male	34	34	68
	Total	68	63	131
Total	Female	46	58	104
	Male	43	60	103
	Total	89	118	207

Table 2

Descriptive statistics of the mean (M), standard deviation (SD), and number (N) per dimension according to participation in the study and differentiated by the age of the students

Dependent Variable	Group	10-12 years			6-9 years			Total		
		M	SD	N	M	SD	N	M	SD	N
Clinical maladjustment	Control	17.43	7.69	21	17.00	7.36	55	17.12	7.40	76
	Experimental	13.07	8.76	68	15.65	7.94	63	14.31	8.45	131
	Total	14.10	8.68	89	16.28	7.67	118	15.34	8.17	207
Maladjustment to school	Control	3.05	2.50	21	3.84	2.57	55	3.62	2.56	76
	Experimental	3.16	2.26	68	3.65	2.16	63	3.40	2.22	131
	Total	3.13	2.31	89	3.74	2.36	118	3.48	2.35	207

Dependent Variable	Group	10-12 years			6-9 years			Total		
		M	SD	N	M	SD	N	M	SD	N
Emotional symptoms index	Control	31.57	8.51	21	30.00	6.68	55	30.43	7.21	76
	Experimental	27.01	8.00	68	28.70	7.35	63	27.82	7.71	131
	Total	28.09	8.30	89	29.31	7.05	118	28.78	7.62	207
Personal adjustment	Control	23.62	2.556	21	23.02	3.47	55	23.18	3.24	76
	Experimental	23.66	3.18	68	22.95	2.85	63	23.32	3.04	131
	Total	23.65	3.03	89	22.98	3.14	118	23.27	3.11	207
Clinical scale	Control	29.29	15.20	21	30.15	13.18	55	29.91	13.67	76
	Experimental	22.94	15.01	68	27.92	13.60	63	25.34	14.51	131
	Total	24.44	15.21	89	28.96	13.39	118	27.01	14.34	207
Adaptive scale	Control	23.62	2.56	21	23.02	3.47	55	23.18	3.24	76
	Experimental	23.66	3.18	68	22.95	2.85	63	23.32	3.04	131
	Total	23.65	3.03	89	22.98	3.14	118	23.27	3.11	207
Negative attitude toward school	Control	1.38	0.74	21	1.95	1.16	55	1.79	1.09	76
	Experimental	1.57	1.08	68	2.05	1.22	63	1.80	1.17	131
	Total	1.53	1.01	89	2.00	1.19	118	1.80	1.14	207
Anxiety	Control	9.05	3.96	21	7.42	3.63	55	7.87	3.77	76
	Experimental	6.59	4.29	68	6.92	3.58	63	6.75	3.95	131
	Total	7.17	4.32	89	7.15	3.60	118	7.16	3.91	207
Negative attitude toward teachers	Control	1.38	0.74	21	1.95	1.16	55	1.79	1.09	76
	Experimental	1.57	1.08	68	2.05	1.22	63	1.80	1.17	131
	Total	1.53	1.01	89	2.00	1.19	118	1.80	1.14	207
Atypicality	Control	4.24	3.16	21	5.00	2.80	55	4.79	2.90	76
	Experimental	2.65	2.74	68	4.52	3.02	63	3.55	3.02	131
	Total	3.02	2.91	89	4.75	2.92	118	4.00	3.03	207

Dependent Variable	Group	10-12 years			6-9 years			Total		
		M	SD	N	M	SD	N	M	SD	N
Self-esteem	Control	5.62	0.92	21	5.36	1.18	55	5.43	1.11	76
	Experimental	5.51	1.19	68	5.35	1.08	63	5.44	1.14	131
	Total	5.54	1.13	89	5.36	1.12	118	5.43	1.13	207
Conduct problems	Control	2.48	2.25	21	2.51	2.12	55	2.50	2.14	76
	Experimental	2.25	2.29	68	2.79	2.00	63	2.51	2.16	131
	Total	2.30	2.27	89	2.66	2.06	118	2.51	2.15	207
Depression	Control	3.00	2.43	21	3.31	2.22	55	3.22	2.27	76
	Experimental	2.38	1.92	68	3.10	2.23	63	2.73	2.10	131
	Total	2.53	2.05	89	3.19	2.22	118	2.91	2.17	207
Social stress	Control	3.10	3.42	21	3.24	1.91	55	3.20	2.40	76
	Experimental	2.68	2.53	68	3.05	2.50	63	2.85	2.51	131
	Total	2.78	2.75	89	3.14	2.24	118	2.98	2.47	207
Locus of control	Control	4.14	2.26	21	4.58	2.71	55	4.46	2.58	76
	Experimental	3.84	3.08	68	4.21	2.84	63	4.02	2.96	131
	Total	3.91	2.90	89	4.38	2.77	118	4.18	2.83	207
Interpersonal relationships	Control	8.10	1.95	21	7.91	1.93	55	7.96	1.92	76
	Experimental	8.21	1.67	68	7.81	1.81	63	8.02	1.75	131
	Total	8.18	1.73	89	7.86	1.86	118	8.00	1.81	207
Relationships with parents	Control	9.90	1.00	21	9.75	1.28	55	9.79	1.20	76
	Experimental	9.94	1.20	68	9.79	1.22	63	9.87	1.21	131
	Total	9.93	1.15	89	9.77	1.24	118	9.84	1.20	207
Sense of inadequacy	Control	2.71	2.33	21	2.76	2.40	55	2.75	2.36	76
	Experimental	1.65	1.86	68	2.48	1.98	63	2.05	1.96	131
	Total	1.90	2.02	89	2.61	2.18	118	2.30	2.14	207

Dependent Variable	Group	10-12 years			6-9 years			Total			76
		M	SD	N	M	SD	N	M	SD	N	
	Experimental	48.18	14.56	68	53.49	13.10	63	50.73	14.08	131	
	Total	49.72	14.98	89	54.51	12.71	118	52.45	13.90	207	

In order to explore statistical differences between students whose teachers received SEL training compared to students with teachers without SEL instruction, a parametric comparison was completed through ANOVA, see Table 3.

Table 3

Effects of the analysis of variance by teacher participation (yes/no) for all students (SS: sum of squares; df: degrees of freedom; MS: mean square)

Dependent variable	SS	df	MS	F	p-value	η^2
Clinical maladjustment	378.55	1	378.55	5.80	.017*	.028
Maladjustment to school	2.36	1	2.36	0.43	.514	.002
Emotional symptoms index	327.59	1	327.59	5.78	.017*	.027
Personal adjustment	0.90	1	0.90	0.09	.762	.000
Clinical scale	1005.38	1	1005.38	4.98	.027*	.024
Adaptive scale	0.90	1	0.90	0.09	.762	.000
Negative attitude toward school	2.62	1	2.62	0.91	.342	.004
Anxiety	60.37	1	60.37	4.00	.047*	.019
Negative attitude toward teachers	0.01	1	0.01	0.01	.942	.000
Atypicality	73.94	1	73.94	8.34	.004*	.039
Self-esteem	0.00	1	0.00	0.00	.996	.000
Conduct problems	0.01	1	0.01	0.00	.971	.000
Depression	11.95	1	11.95	2.56	.111	.012
Social stress	5.64	1	5.64	0.92	.338	.004
Locus of control	9.54	1	9.54	1.19	.277	.006

Dependent variable	SS	df	MS	F	p-value	η^2
Interpersonal relationships	0.14	1	0.14	0.04	.834	.000
Relationships with parents	0.31	1	0.31	0.22	.642	.001
Sense of inadequacy	23.85	1	23.85	5.34	.022*	.025
Total	1051.21	1	1051.21	5.56	.019*	.026

Note. Statistically significant differences at a level of .05

Regarding the general results of the research, statistically significant differences were found (small effect size, $\eta^2 < .03$) in several dimensions: Clinical maladjustment ($F = 5.80, p = .017$), Emotional symptoms index ($F = 5.78, p = .017$), and Clinical scale ($F = 4.98, p = .027$); in various subdimensions: Anxiety ($F = 4.00, p = .047$), Atypicality ($F = 8.34, p = .004$), and Sense of inadequacy ($F = 5.34, p = .022$); as well as in Total score ($F = 5.56, p = .019$), with lower values in the students whose teachers attended the SEL training when compared to those whose teachers did not.

In addition, no statistically significant differences were found in any of the dimensions, according to gender (analyses omitted).

According to existing evidence, it was hypothesized that age could play an important role in the results, with significant differences in the studied dimensions. Therefore, the sample was divided according to the developmental period (middle childhood and late childhood).

There were differences when comparing the age ranges, such as the Clinical scale ($p = .024$), Negative attitude toward teachers ($p = .003$), Atypicality ($p = .000$), Depression ($p = .028$), Sense of inadequacy ($p = .017$), as well as the Total score ($p = .014$). These results led us to analyze the two age ranges separately (Tables 4 and 5).

Table 4

Effects of the analysis of variance by teacher participation (yes/no) for students ages 6-9 years

Dependent Variable	SS	df	MS	F	p-value	η^2
Clinical maladjustment	53.45	1	53.45	0.91	.343	.008
Maladjustment to school	1.01	1	1.01	0.19	.671	.002

Dependent variable	SS	df	MS	F	<i>p</i> -value	η^2
Emotional symptoms index	49.75	1	49.75	1.02	.319	.009
Personal adjustment	0.13	1	0.13	0.01	.910	.000
Clinical scale	145.35	1	145.35	0.81	.370	.007
Adaptive scale	0.13	1	0.13	0.01	.910	.000
Negative attitude toward school	2.43	1	2.43	0.89	.350	.008
Anxiety	7.27	1	7.27	0.56	.456	.005
Negative attitude toward teachers	0.31	1	0.31	0.22	.644	.002
Atypicality	6.66	1	6.66	0.78	.379	.007
Self-esteem	0.01	1	0.01	0.01	.945	.000
Conduct problems	2.38	1	2.38	0.56	.456	.005
Depression	1.34	1	1.34	0.27	.604	.002
Social stress	1.05	1	1.05	0.21	.650	.002
Locus of control	4.14	1	4.14	0.54	.466	.005
Interpersonal relationships	0.29	1	0.29	0.08	.773	.001
Relationships with parents	0.07	1	0.07	0.04	.835	.000
Sense of inadequacy	2.43	1	2.43	0.51	.477	.004
Total	139.64	1	139.64	0.86	.355	.007

Table 5

Effects of the analysis of variance by teacher participation (yes/no) for students ages 10-12 years.

Dependent variable	SS	df	MS	F	<i>p</i> -value	η^2
Clinical maladjustment	304.32	1	304.32	4.18	.044*	.046
Maladjustment to school	0.21	1	0.21	0.04	.844	.000
Emotional symptoms index	333.15	1	333.15	5.06	.027*	.055
Personal adjustment	0.03	1	0.03	0.00	.955	.000

Dependent variable	SS	df	MS	F	<i>p</i> -value	η^2
Clinical scale	645.86	1	645.86	2.85	.095	.032
Adaptive scale	0.03	1	0.03	0.00	.955	.000
Negative attitude toward school	0.10	1	0.10	0.03	.859	.000
Anxiety	97.05	1	97.05	5.47	.022*	.059
Negative attitude toward professors	0.60	1	0.60	0.58	.449	.007
Atypicality	40.62	1	40.62	5.02	.028*	.055
Self esteem	0.18	1	0.18	0.14	.713	.002
Conduct problems	0.82	1	0.82	0.16	.692	.002
Depression	6.12	1	6.12	1.46	.230	.017
Social stress	2.81	1	2.81	0.37	.545	.004
Locus of control	1.49	1	1.49	0.18	.677	.002
Interpersonal relationships	0.20	1	0.20	0.07	.799	.001
Relationships with parents	0.02	1	0.02	0.02	.900	.000
Sense of inadequacy	18.28	1	18.28	4.68	.033*	.051
Total	685.81	1	685.81	3.13	.080	.035

Note. Statistically significant differences at a level of .05

Results indicated that all statistically significant differences disappeared during the stage of 6-9 years in the two dimensions Clinical maladjustment ($F = 0.91, p = .343$) and Emotional symptoms index ($F = 1.00, p = .319$); in the Clinical scale ($F = 0.81, p = .370$), as well as in the subdimensions and Total score ($F = 0.86, p = .355$). However, in the age range made up of 10-12 years, despite there were no differences in the Clinical scale ($F = 2.85, p = .095$) or Total score ($F = 3.13, p = .080$). Results showed statistically significant differences, with medium effect size, $\eta^2 > .04$, in Clinical maladjustment ($F = 4.18, p = .044$), Emotional symptoms index ($F = 5.06, p = .027$), Anxiety ($F = 5.47, p = .022$), Atypicality ($F = 5.02, p = .028$), and Sense of inadequacy ($F = 4.68, p = .033$), with decreased scores in the students who had teachers trained in SEL.

Discussion

The present study advances our understanding of the effectiveness of RULER on mental health in students between 6 and 12 years of age. The results partially support the first proposed hypothesis: that RULER significantly reduces scores related to clinical maladjustment. Specifically, the results show the impact that SEL training completed by primary teaching staff had in the reduction of anxiety, atypicality and one's sense of inadequacy, in comparison to students whose teachers had not received SEL training. However, the results did not show evidence of a positive impact on the adaptive scale. Consequently, we considered the role of age in the effectiveness of SEL training on clinical variables. We predicted the benefits of the SEL intervention to decrease variables related to psychological maladjustment would be stronger during late childhood, comparing to middle childhood.

First, a significant reduction was achieved in three clinical subdivisions, anxiety, atypicality, and sense of inadequacy, of the BASC-2 questionnaire. These results concur with prior evidence regarding SEL's effectiveness on children and youth (Durlak et al., 2011; Taylor et al., 2017; Ruiz-Aranda et al., 2012). It appears that the SEL interventions were able to equip teachers with the understanding and abilities needed to provide their students with tools to recognize emotional experiences more effectively, empowering them to identify stimuli that could trigger physical or cognitive symptoms, facilitating the vocabulary to be able to express them adequately, and providing them with healthier strategies for emotional regulation, such as breathing techniques, self-talk, or reevaluation, which allow students to analyze stressful or challenging situations in a more well-balanced way. On the other hand, the incorporation of these tools into class in order to promote emotional awareness, such as the Mood Meter, could help teachers to obtain more complete information about students' emotions, providing a better response to students' needs (Choi, 2018; Costello et al., 2011; WHO, 2014); therefore, SEL initiatives could prevent these types of emotional symptoms. Regarding the Emotional symptoms index variable, indicating internalizing problems, another variable that was shown to decrease significantly was sense of inadequacy. Teachers who received the SEL training could be more capable of naming, validating, and teaching more effective regulation techniques, providing strategies so that students are able to respond more deliberately and

connect with their own thoughts. In the presence of intense emotional experiences, there exists a percentage of children who resort to automatic responses, such as avoidance, isolation, rumination, or bad habits (WHO, 2014). However, providing the school with SEL tools enables it to promote better coping strategies. For example, in RULER, educators and children learn a tool called the Meta-Moment. This teaches people to create greater distance between the stimulus and emotional response, facilitating the implementation of more helpful strategies and fostering a growth mindset regarding one's own abilities to manage complex situations. Prior investigations show how teaching staff can serve as optimal models for effective development of socio-emotional abilities of students and the role of emotional co-regulation in the process (Castillo-Gualda et al., 2017; Castillo-Gualda et al., 2018; Eisenberg et al., 2010; Kurki et al., 2016).

According to our second hypothesis, we obtained significant differences in our findings between the 10-12-year-old group and the 6-9-year-old group, which could be attributed to various aspects of development. Late childhood and adolescence are vital moments during which a greater incidence of emotional alterations is reported (Kessler et al., 2007). On the other hand, the transition from middle childhood to late childhood is a vital period during which girls and boys should be capable of progressively incorporating more cognitive strategies to manage the intensity of certain emotions (Saarni, 1999). Specifically, the maturation of the prefrontal cortex is a complex, non-linear process during which developmental changes of cerebral electrical activity from the age of 10 years forward are particularly evident. Higher levels of dopamine as opposed to serotonin and later maturation of the prefrontal cortex versus the amygdala seem to explain more intense responses to emotionally intense stimuli during this developmental stage (McRae et al., 2012; Walker, 2002). In addition, according to prior literature, the higher prevalence of psychological maladjustment during late childhood in comparison to middle childhood, could explain why the results were seen in the age range of 10 to 12 years and not in the preceding group (Aumaitre et al., 2021).

Our data corroborate previous evidence regarding the role of adults and social context in which children develop as a key aspect for healthy socio-emotional development. The absence of compassionate models that provide a guide for healthy coping with stressful situations decisively influences children's ability to learn and use effective emotional strategies (Phillips et

al., 2004; Phillips et al., 1994). Consequently, providing teachers with SEL tools that infuse in their daily relation with children could constitute a relevant way of prevention in educational settings.

Considering the preventive nature of SEL initiatives, the present study provided some evidence regarding the role that RULER Approach to SEL might have in late childhood, before certain clinical manifestations can become more intense during adolescence (Choi, 2018; Costello et al., 2011).

Limitations

First, the most important limitation of the present study is that it does not correspond to a pretest-posttest design, which would have identified the students' levels of maladjustment to school, clinical maladjustment, emotional symptoms and personal adjustment, prior to intervention. For this reason, in future research it is suggested to increase the sample size and include pretest-posttest designs with a randomized control group to be able to identify the impact attributable to the SEL intervention. Second, the data collected do not allow for the reinforcement of the students' socio-emotional abilities, nor the medium- to long-term effects of the intervention; thus, it is suggested to proceed with longitudinal studies that permit the incorporation of follow-up measures in order to advance the role that the developmental process plays on socio-emotional abilities. Third, on the basis of a limited sample size, both in volume and in geographical disparity, it is notably the unequal distribution of participants, with larger number of students whose teachers had received SEL training, comparing to those whose teachers had not received the training. Additionally, the participation of only one school, both in the experimental and control group, make difficult the generalization of the results. Consequently, the participation of more schools in the present research could have allowed for a comparison of the effectiveness of SEL intervention in other school contexts (public, concerted, or private) and led to more socio-economic diversity. Finally, in the present investigation, self-informed measures of variables related to psychological maladjustment were used. In future research, it would be advised to carry out evaluations that consider socio-emotional abilities as such, not focus on alterations or clinical symptoms; thus, the impact on children could be more adequately measured

wherein the presence of certain emotional symptoms is less prevalent. Similarly, it is suggested to evaluate RULER mid-time and long-time effects, introducing follow-up measures that also provide information regarding the quality of implementation and satisfaction with the SEL program.

Despite these limitations, the present study supports, with empirical evidence, the benefit that an SEL intervention based on Emotional Intelligence abilities (Mayer & Salovey, 1997), RULER, has on the decrease of variables related with maladjustment and clinical symptoms of students between the ages of 10 to 12 years. In addition, the present research emphasizes the role that SEL training of adults can have on students, advancing the theory of change regarding the effectiveness of SEL programs in general and of the RULER approach in particular (Brackett et al., 2019). Accordingly, the future of SEL initiatives should focus on the need to develop in teaching staff the abilities to effectively co-regulate emotions in educational environments, contributing to the prevention of mental health problems in students from childhood.

In conclusion, this study intends to advance understanding of the role that the training of teaching staff in SEL tools and abilities can have on the prevention of problems related to clinical maladjustment in childhood, showing preliminary evidence of the role adults play in the creation of an adequate atmosphere for optimal development of children and youth. Thus, including SEL tools in the educational curriculum and pedagogy, will help professionals to be sensitive and responsive to emotional needs from childhood supporting their optimal development. Schools are a great place where children and adults can develop protective abilities that help them manage unpleasant emotions particularly prevalent during these challenging times.

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