Educación XX1
ISSN: 1139-613X · e-ISSN: 2174-5374

Cooperative classroom as a protective factor for mental health-externalizing problems in Primary Education

Aulas cooperativas como factor protector de salud mental-problemas externalizantes en Educación Primaria

Benito León-del-Barco [1,2*]
Carolina Bringas-Molleda [1,2]
María Isabel Polo-del-Río [1,2]
Santiago Mendo-Lázaro [1,2]
Víctor López-Ramos [1,2]

[1] Universidad de Extremadura, Spain
[2] Laboratorio de Investigación en Cooperación
* Corresponding author. E-mail: bleon@unex.es

How to reference this article:

León del Barco, B., Bringas Molleda, C., Polo del Río, M. I., Mendo Lázaro, S., & López Ramos, V. (2026). Cooperative classroom as a protective factor for mental-health-externalizing problems in Primary Education. *Educación XX1*, *29*(1), 17-37. https://doi.org/10.5944/educxx1.42904

Reception date: 14/10/2024
Acceptance date: 16/01/2025
Published online: 15/01/2026

ABSTRACT

Cooperative learning is used in the classroom to promote teamwork, interaction with peers, and improve academic performance. On the other hand, behavioral and emotional problems, related to disruptive behaviors in the classroom, hyperactivity, or attention deficit, translate into behaviors related to aggression, opposition to social patterns, low tolerance to frustration, which occur during childhood and adolescence and have a negative impact on personal, social, and family development, affecting school results. The objective of this study is to establish a relationship between cooperative learning in the classroom and externalizing problems in primary school students. A total of 490 students from 5th and 6th grade of primary schools from 28 classrooms participated, 56.3% of whom were women, with an average age of 10.56 years. A multi-level analysis was carried out using an ANOVA random effects model, and a regression analysis which would allow us to verify how certain variables studied at the classroom level related to the components of cooperative learning are going to affect externalizing problems.

The results indicate that there are statistically significant differences in externalizing problems, based on, firstly, overall cooperation in the classroom, and secondly, social skills and responsibility. This allows us to conclude that the methodology based on cooperative learning in the classroom is effective in directing the behavior of students with externalizing problems, positively affecting psychological and emotional well-being, the exchange of social support, the development of responsibility and social skills, as well as the reduction of anxiety and stress

Keywords: cooperative learning, mental health, hyperactivity, externalizing problems, primary education, multi-level analysis

RESUMEN

El aprendizaje cooperativo es utilizado en las aulas con la finalidad de favorecer el trabajo en equipo, la interacción con los compañeros y mejorar el rendimiento académico. Por otro lado, los problemas comportamentales y emocionales, referidos a conductas disruptivas en el aula, hiperactividad, o déficit de atención, se traducen en comportamientos relacionados con la agresión, oposición a pautas sociales, baja tolerancia a la frustración, que ocurren durante la infancia y adolescencia e inciden negativamente en el desarrollo personal, social y familiar, repercutiendo en los resultados escolares. El objetivo de este estudio es establecer una relación entre el aprendizaje cooperativo en el aula y problemas externalizantes en estudiantes de Educación Primaria. Para ello participaron un total de 490 estudiantes de 5º y 6º de Primaria, pertenecientes a 28 aulas, siendo el 56,3% mujeres, con una media de edad de 10,56 años. Se llevó a cabo un análisis multinivel apoyándose en un modelo ANOVA de efectos aleatorios, así como un análisis de regresión que nos permitiría comprobar cómo ciertas variables estudiadas del nivel aula relativas a los componentes del aprendizaje cooperativo van a incidir en los problemas externalizantes. Los resultados indican que existen diferencias estadísticamente significativas de los problemas externalizantes en función por

una parte, de la cooperación global en el aula, y por otro lado, de las habilidades sociales y responsabilidad. Ello nos permite concluir que la metodología basada en el aprendizaje cooperativo en el aula resulta eficaz para dirigir el comportamiento del estudiante con problemas externalizantes, incidiendo positivamente en el bienestar psicológico y emocional, el intercambio de apoyo social, el desarrollo de la responsabilidad y de las habilidades sociales, así como en la reducción de ansiedad y estrés.

Palabras clave: aprendizaje cooperativo, salud mental, hiperactividad, problemas externalizantes, educación primaria, análisis multinivel

INTRODUCTION

Cooperative learning (CL), collaborative learning and other types of group learning are increasingly used in the classroom with the aim of encouraging teamwork among students, enhancing their performance and learning and allowing them to learn to work as part of a team and develop their interpersonal skills (Bermejo et al., 2021; León-del-Barco et al., 2019).

Taking into account the numerous research about this learning methodology, we can define CL as a teaching-learning model through which students divide in small groups, ideally heterogeneous, sharing efforts and resources in order to achieve optimal learning results (León-del-Barco et al., 2023; Johnson et al., 2014; Rivera-Pérez et al., 2021).

According to Johnson & Johnson (2009), CL groups are based on a positive interdependence between group members. Objectives are structured in such a way that students take an interest in their own efforts and the performance of others. There is clear individual accountability, whereby each student's mastery of the assigned content is evaluated. The group is given information about each member's progress so that they know who needs help. Leadership and responsibility for learning are shared by all group members. Finally, the aim is to enable every group member to learn as much as possible. In summary, CL comprises five key characteristics: positive interdependence, in which group members depend on one another to achieve the results; interaction, which implies providing help and support among group members; individual commitment or responsibility, where each group member assumes the need of performing the task; teaching of interpersonal and social skills, referring the efficient communication between members for the right development of the activity; and quality of group processes, or knowing how to reflect on the performed activities, elaborating both positive and negative criticism. With these elements, each group member achieves their objective only if the other members also achieve theirs. Besides, the individual's rewards or reinforcements are directly proportional to the quality of the group's work.

Some of the cooperative techniques applied in the classrooms taking into account the said elements include, for example, the jigsaw (Aronson & Osherow, 1980), which eases the understanding of a topic divided in different parts so all members learn something about it; the Teams-Games-Tournaments (Slavin, 2012), which aims at mastering a topic in order to get rewards after the inter-team lecture, and it is also based on individual learning; cooperative tables, based in concept identification (León-del-Barco et al., 2017); or 1-2-4 structure by Kagan (1994), a dynamics that starts with individual work and ends as a team task.

Cooperative learning has been the subject of numerous research studies, starting in lab studies about cooperation issues. Some studies have focused on comparing three types of interaction and organization: cooperative, competitive and individual (Johnson & Johnson, 1990; Ovejero, 2018), concluding that cooperative situations are better in both academic and social terms. Most research has focused on analysing the results and outcomes of CL techniques in relation to academic, social and affective variables (León-del Barco et al., 2023). With regard to academic variables, one of the last revisions carried out by Jonhnson & Johnson (2018) of a meta-analysis studying the relation between CL and academic performance showed that cooperation is superior to competition and individualism when it comes to the performance and productivity of all participants, dedicating more time to task performance and fostering a greater level of cognitive development. According to Gillies (2016), there is strong evidence of the effectiveness of CL for learning and performance.

Cooperative learning also influences affective and social variables. In affective terms, CL techniques affect motivation, self-esteem, and emotion control (Mamani, 2019; Sharifi-Shayan et al.,2020). In social terms, a cooperative environment and work in cooperative groups fosters acceptance among peers and makes a significant contribution to the development and enhancement of social skills (Camacho-Minuche et al., 2021; Mendo-Lázaro et al., 2018). Some research has confirmed that cooperative learning in the classroom improves the students' prosocial behavior (Manzano-Sánchez et al., 2021; Navarro-Patón et al., 2019; Van Ryzin et al., 2020).

Based on a meta-analysis of 177 studies on CL, Johnson & Johnson (1990) conclude that CL promotes greater interpersonal attraction between students and leads to more positive attitudes towards those who are different. In Spain, Boix & Ortega (2020) conducted a review of the scientific literature to identify the benefits of CL in the core subject areas at primary level as an alternative to traditional, competitive educational methods. The benefits identified by the authors were primarily affective and social, with a positive influence on classroom relationships and environment CL is also an effective way to reduce school bullying and social

exclusion, as well as alcohol and tobacco consumption (Polo-del-Río et al., 2017; Van Ryzin et al., 2020).

Mental health analysis of children and adolescents at risk of emotional disorders or behavioral problems has become a globally significant research topic and a priority issue in public health policy (Houweling et al., 2022). Emotional and behavioral problems in children and adolescents raise major social concern due to their association with disability, suffering, functional impairment, and significant economic costs to public health systems worldwide. Among the emotional and behavioural problems observed in childhood and adolescence, two broad categories can be identified: internalizing behaviours, which refer to emotional problems, and externalizing behaviours, which refer to behavioural problems. Both categories are prevalent during the school-age years and interfere with personal, social, and academic development, affecting adaptation to family, social, and educational environments, as well as the development of socioemotional skills (Hand & Lonigan, 2022; Sorcher et al., 2022).

Externalizing problems refer to a range of behaviours including aggression, classroom disruptions, hyperactivity, impulsivity, and attention deficits (Fonseca-Pedrero et al., 2020; Sorcher et al., 2022; Sullivan et al., 2022). These problems manifest in various forms such as exaggerated and inappropriate expressions of anger, defiance, low frustration tolerance, poor impulse control, excessive tantrums, and aggressive or violent behaviour. They are associated with poor academic performance, difficulties in managing peer conflict, social problems, substance abuse, delinquency, inappropriate use of digital media, and even psychopathology in childhood, adolescence, and beyond (Danneel et al., 2019; García-Gil et al., 2022; Salavera & Usan, 2019). If these problems persist beyond childhood, they may negatively impact long-term mental health and are considered precursors of more severe externalizing disorders, such as conduct disorder, oppositional defiant disorder, and antisocial personality disorder (Martin-Herz et al., 2022). Similarly, when externalizing problems are intense and persistent, they may evolve during child development into Attention-Deficit/Hyperactivity Disorder (ADHD), one of the most common psychopathological conditions during school age (Sampaio & Flores, 2018).

Externalizing problems are thus among the most observable characteristics of ADHD. In this disorder, clearly identifiable externalizing behaviours include hyperactivity, impulsivity, and psychomotor restlessness, which impact school functioning, academic performance, family interactions, and peer relationships (Andrade & Tannock, 2014). Specifically, at the behavioural level, students with ADHD tend to exhibit socially negative behaviours more frequently than their peers, such as aggression and provocative social responses, making them more likely to experience social isolation in the classroom (Mikami & Lorenzi, 2011).

Since individuals are not born with a predetermined social repertoire but rather acquire it from childhood and throughout the different stages of development, the process of acquiring social competence equips them with the tools needed for successful social interaction. Some studies link externalizing problems with poor social competence, as these issues may inhibit children's ability to form and maintain successful social relationships (Albrecht & Karabenick, 2018).

According to Wang and Liu (2021), students with deficits in social competence may behave aggressively, which in turn predicts peer rejection. This rejection can trigger negatively biased cognitive processing, such as interpreting others' intentions as hostile, thereby fuelling a cycle of aggression. Additionally, students with poor social competence may have difficulties initiating and maintaining positive peer interactions. Peer rejection may further increase the likelihood of affiliating with others who also exhibit low social competence, reinforcing aggressive tendencies and making it even more difficult to learn socially adaptive behaviours.

Cooperative behaviours are also not innate but learned and developed throughout different stages of growth. Cooperative classroom work is considered one of the most effective educational strategies for guiding and managing the behaviour of students with externalizing problems in the school context, promoting more satisfying social interactions and minimizing such problems. Research highlights the importance of implementing carefully planned cooperative methodologies, mediated by teachers, aimed at improving social skills and peer acceptance in classrooms with students displaying externalizing behaviours, especially those with ADHD. These methods also contribute to the improvement of personal factors such as self-esteem and emotional intelligence (Andrade & Tannock, 2014; González-Moreno & Molero-Jurado, 2022; Mendo-Lázaro et al., 2018; Tacca-Huamán et al., 2020; Trigueros et al., 2020).

Due to the limited number of studies linking cooperative learning and externalizing mental health problems, the aim of this study is to explore associations between cooperative learning in the classroom and externalizing problems in primary school children. This research seeks to analyse how classroom-level contextual variables, related to cooperative environments, influence externalizing behaviours to varying degrees. The students participating in our study are grouped in different classrooms which, due to factors such as class size, classroom management styles, and different teaching staff, may influence the dependent variable under investigation. The need to control for the potential relationship between students and the classroom environment in which they engage in learning activities leads us to apply multivariate regression models that are suitable for nested or hierarchical data structures.

METHODOLOGY

A cross-sectional ex post facto research design was followed, studying a phenomenon that occurred at a specific point in time, without continuity over time and without manipulation of the variables under study. The data collection was carried out using a questionnaire-based methodology.

Participants

The participants were selected using multi-stage cluster sampling and random selection of classes at schools with several groups in Years 5 and 6 at primary level. Cluster sampling was carried out by selecting 14 public educational institutions in Extremadura at random. 75% of the institutions were public and the rest were private with public funding. 65% of them were located in rural areas. For the random selection of class groups, all classes at the schools were assigned a number and random numbers were generated by a computer.

The sample, considering a trust interval of 95% and error margin of ±5, was made up of 490 primary school students in Years 5 (222) and 6 (268). The average age was 10.56 years old (SD= .497, range 10-11); 56.3% (n=276) were female and 43.7% (n=214) were male. A total of 28 classes participated in the study.

Instruments

Cooperative Learning Questionnaire, CAC (Fernández-Río et al., 2017). This short instrument evaluates the key components of CL in the classroom. It is made up of 20 items divided into five factors or dimensions: 1. Interpersonal skills, e.g., items such as "We work on discussing, debating and listening to others" and "We reach agreements within the group to make decisions". 2. Group processing, e.g., items such as "We talk to each other to make sure that everyone in the group knows what is being done" and "Groupmates debate ideas and opinions". 3. Positive interdependence, e.g., items such as "We cannot finish the tasks without the groupmates' contributions" and "The better each group member completes his/her task, the better it is for the group". 4. Promotive interaction, e.g., items such as "Groupmates relate with each other and interact during the tasks" and "Interaction among groupmates is necessary to complete the tasks". 5. Individual accountability, e.g., items such as "Every group member has to participate in the group's tasks" and "Every group member must strive to try hard in the group's activities".

Each of these dimensions is evaluated through four items. The response format used is a five-point Likert-type scale (1= Completely disagree to 5= Completely

agree). The CAC provides a global cooperation factor, which is determined by the five factors.

In this study, the reliability indices for the different factors were: global cooperation factor, Cronbach's α = .91, McDonald's Ω = .91; interpersonal skills factor (α = .70, Ω = .71); group processing factor (α = .70, Ω = .71); positive interdependence factor (α = .65, Ω = .66); promotive interaction factor (α =.67, Ω =.68); individual accountability factor (α = .87, Ω = .88).

To determine whether the model found in the original validation study (Fernández-Rio et al., 2017) is a suitable fit for our data, we used the goodness of fit indices shown in Table 1. As the table indicates, the fit indices are close to desirable values and show evidence of validity for the generalization of our findings.

Table 1

Goodness of fit indices for the proposed model, Cooperative Learning Questionnaire (CAC)

Model	χ^2	χ^2/df	GFI	IFI	TLI	CFI	RMSR	RMSEA
5 factors	356.829	5.025	0.974	0.891	0.860	0.900	0.091	0.058

Strengths and Difficulties Questionnaire (SDQ), self-report version by Goodman (1997). The self-report version of the SDQ is a short instrument with excellent internal consistency in all its scales in both the international and the Spanish version. It comprises 25 items divided into five dimensions or subscales (1. Emotional Symptoms, 2. Conduct Problems, 3. Peer Relationship Problems, 4. Hyperactivity and 5. Prosocial Behaviour). Each of the subscales is assessed via five items. The response format used is a three-point Likert-type scale (0= No, not at all, 1= Sometimes and 2= Yes, always).

For community samples, it is advisable to group the items from the Behavioural Problems subscale and the items from the Hyperactivity subscale into a new scale called Externalizing Problems. This scale was used in the present study to assess the "externalizing problems" variable. Example items include: "I am restless, hyperactive, I can't stay still for long", "When I am upset, I get really angry and lose control", "I often get in fights, I manipulate people".

Regarding the overall reliability of the scale, it obtained Cronbach's α = .76 and McDonald's Ω = .76, while the Externalizing Problems scale obtained α= .73 and Ω= .73. To determine whether the Externalizing Problems scale is a suitable fit for our data, we used the goodness of fit indices shown in Table 2. As the table indicates, the fit indices are close to desirable values and show evidence of validity for the generalization of our findings.

Table 2
Goodness of fit indices for the Prosocial Behaviour scale of the Strengths and Difficulties Questionnaire (SDQ), self-report version

Model	χ^2	χ^2/df	GFI	IFI	TLI	CFI	RMSR	RMSEA
1 factor	175.861	5.172	0.988	0.821	0.760	0.819	0.063	0.079

Procedure

We followed the ethical guidelines established by the American Psychological Association (2010) with regard to informed consent from parents, as all participants were underage. Firstly, we contacted the schools to explain the study objectives and request authorization to complete the questionnaires and obtain access to grades. The questionnaire was then administered by class group. Besides, the anonymity of the responses, the confidentiality of the data obtained and the exclusive use of this data for research purposes were guaranteed. The questionnaires were administered during school hours, taking around 20 minutes in an appropriate setting without distractions.

Data analysis

First of all, a reliability analysis was performed on the instruments and a confirmatory analysis was carried out. Then, given the hierarchical nature of the data, a multilevel analysis was conducted. The statistical adjustment process began with a random effects ANOVA model, which is known as the unconditional or null model. Once this first step was complete, two means as outcomes models A) and B) were fitted using regression analysis (RMR) in order to analyse how the explanatory or contextual study variables at the class level have a greater or lesser influence on externalizing problems.

Firstly, Model A was fitted to ascertain the extent to which the global cooperation factor in the class explained and predicted prosocial behaviour. Then, Model B was used to analyse the degree to which the five key components of CL (group processing, interpersonal skills, promotive interaction, positive interdependence and individual accountability) explain and predict externalizing problems among students.

In these analysis, the dependent variable was prosocial behaviour. Global fit statistics (-2LL deviation, Akaike information criterion (AIC) and Bayesian information criterion (BIC)) were calculated to determine the extent to which the proposed model can represent the variability observed in the data; the lower the value of the global fit statistics, the better the model fits the data.

Statistical analysis was carried out using the SPSS 26.0 package for PC and JASP Free.

RESULTS

Table 3 contains descriptive statistics for the study variables. The dependent variable was Externalizing Problems and the predictor or explanatory variables for level 2 (class level) were Global Cooperation within the class, Interpersonal Skills, Group Processing, Positive Interdependence, Promotive Interaction and Accountability. The number of participants was n= 490 and the level 2 n= 28 classes.

Table 3
Descriptive statistics for the study variables

Dependent variable (N=490)	M	DT	Minimum	Maximum
Externalizing Problems (EP)	15.824	3.560	10	27
Variables Nivel 2, aula (N=28)	M	DT	Minimum	Maximum
Global Cooperation Factor (GCF)	3.874	0.562	1.65	5
Interpersonal Skills (IS)	3.441	0.835	1	5
Group Processing (GP)	3.585	0.805	1	5
Positive Interdependence (PI)	3.991	0.687	1	5
Promotive Interaction (PRI)	4.028	0.671	1	5
Accountability (A)	4.325	0.657	1	5

The students participating in our study are grouped into different classes, whose characteristics may influence the dependent study variable: classroom management style, teacher, etc. The need to control this possible relationship between students and the class in which their learning activities take place prompted us to apply

multivariate regression models for nested or hierarchical data. Hierarchical or multilevel linear models were designed to analyze data when some of the study variables are nested or grouped into higher level variables; in our study, students are nested in classes with their respective teachers. These models presuppose that students in the same class will tend to display similar behaviors.

Initially, an unconditional or null model was examined to estimate the variance between classes (level 2 variability) and within classes (level 1 variability). This model was calculated without level 2 (class) explanatory or contextual variables and serves as a reference point for evaluating the goodness of fit of the alternative models, in which explanatory or contextual variables at the class level are gradually incorporated. It is important to bear in mind that our objective in this study was to identify an explanatory model for prosocial behavior using only level 2 (class) predictors.

To do this, we applied a random effects ANOVA (null model) to the data. Table 4 shows the results obtained, indicating that the estimate of the constant or intersection, the only fixed effects parameter in the model, was found to be different from zero. In other words, the estimated value (β=15.785) of the Externalizing Problems variable in the 28 classes that participated in the study was not zero ($p < .001$). Meanwhile, we observed the covariance parameter estimates, which are estimates of the parameters associated with the random effects of the model, and found statistically significant differences ($p< .001$). The variance of the factor (classes $\beta = 1.101$) indicates the extent to which externalizing problems varies between classes and the residual variance (residual β =11.722) indicates the extent to which externalizing problems varies within each class.

To interpret these values and calculate the variability between different classes in comparison with the variability between students in the same class, the intraclass correlation coefficient (ICC) was obtained. In our study, we found a value of 0.086; otherwise put, 8.6% of the total variability of prosocial behavior corresponds to differences between class means. These significant differences between class means constitute the level 2 variability.

Once the presence of differences between class means was confirmed, the next step was to identify any variables explaining these differences. To do so, two means as outcomes models were fitted using Regression Analysis (RMR).

Table 4

Interrelations between Prosocial Behavior and Cooperative Elements in the Classroom (Null model: one-factor random effects ANOVA; Models A and B: means as outcomes, regression analysis RMR)

	Null Model	**Model A**	**Model B**
Fixed effects	β (SE)	β (SE)	β (SE)
Intercept: classes	15.785**(.26)	17.945**(.99)	19.217**(1.07)
Global Cooperation Factor (GCF)		**-.0302* (.01)**	
Interpersonal Skills (IS)			**-.202**(0.06)**
Group Processing (GP)			.035 (0.07)
Positive Interdependence (PI)			.044 (0.06)
Promotive Interaction (PRI)			.062 (0.06)
Accountability (A)			-.152** (0.05)
Random effects	β (SE)	β (SE)	β (SE)
Residual	11.722**(0.77)	11.515**(0.76)	11.115**(0.73)
Classes	1.101*(0.53)	1.447*(0.65)	2.095**(0.86)
ICC	0.086	0.112	0.160
Explained variance (R^2)		**31%**	**90%**
Fit statistics	*Value*	*Value*	*Value*
Deviation (-2LL)	2622.924	2624.920	2623.594
AIC criterion	2626.924	2628.920	2627.594
BIC criterion	2635.309	2637.301	2635.958

*p>.05
**p<.01;
SE= standard error
ICC = intraclass correlation coefficient
Deviation= minus two times the logarithm of the maximum likelihood function
AIC= Akaike information criterion
BIC= Bayesian information criterion

Model A was fitted to ascertain the extent to which the Global Cooperation Factor variable explained externalizing problems. The results show significant differences in the externalizing problems variable according to the Global Cooperation Factor for the class (β=-0.0302; p<.05). The ICC rose from 8.6% to 11.2%. The proportion of explained variance at level 2 was 0.310 [(1.101-1.447) /1.101]. In other words, 31% of the differences in prosocial behaviour observed between classes are attributed to the level 2 variable, Global Cooperation.

Model B was fitted, replacing the Global Cooperation Factor from the previous model with the five key components of CL to analyse the extent to which they each predict externalizing problems among students. The data show significant differences in externalizing problems for the variables Interpersonal Skills (β=-0.202; p<.01) and Accountability (β=-0.152; p<.01). The ICC was 16%. Meanwhile, the proportion of explained variance at level 2 was 0.90 [(1.101-2.095) /1.101]. In other words, 90% of the differences in externalizing problems observed between classes can be attributed to the level 2 variables Interpersonal Skills and Accountability.

Model B is a better fit for the data, with lower values (-2LL deviation, AIC and BIC). The higher ICC values in models A and B compared to the null model suggest the possibility of a traditional and standard data analysis.

DISCUSSION AND CONCLUSIONS

In this study, we aimed to analyse how classroom-level contextual variables related to a cooperative environment influence the prevalence of externalizing problems in primary school students. The data reveal significant differences in externalizing problems based on Global Cooperation and the variables Social Skills and Responsibility. The model that best fits the data is Model B, in which the Global Cooperation Factor was replaced with the five essential elements of cooperative learning. This model shows that 90% of the observed differences between classrooms in terms of externalizing problems are attributed to the variables Social Skills and Responsibility.

Preventing the development of emotional and behavioural problems involves identifying both risk and protective factors. Our findings confirm that the more a classroom operates under a cooperative approach, the lower the incidence of externalizing problems among students. Since students with externalizing problems tend to exhibit more disruptive behaviours, engage in fewer activities, participate in more solitary play, and more frequently display socially negative behaviours such as aggression and provocative social responses (Fonseca-Pedrero et al., 2020; Sullivan et al., 2022), implementing a cooperative learning methodology may serve as a protective factor against behavioral issues. In classrooms where cooperative learning is more prevalent, helping behaviours, social support, and emotionally

comforting interactions among peers are promoted and developed, as indicated by Navarro-Patón et al. (2019).

Preventing the development of emotional and behavioural problems involves identifying both risk and protective factors. Our findings confirm that the more a classroom operates under a cooperative approach, the lower the incidence of externalizing problems among students. Since students with externalizing problems tend to show more disruptive behaviours, engage in fewer activities, participate in more solitary play, and more frequently display socially negative behaviours such as aggression and provocative social responses (Fonseca-Pedrero et al., 2020; Sullivan et al., 2022), implementing a cooperative learning methodology may serve as a protective factor against behavioural issues. In classrooms where cooperative learning is more prevalent, helping behaviours, social support, and emotionally comforting interactions among peers are promoted and developed, as indicated by Navarro-Patón et al. (2019).

Cooperative learning in the classroom has positive effects not only on academic performance (Bermejo et al., 2021; Gillies, 2016) but also on affective and social variables that influence externalizing problems. Cooperative learning increases self-esteem, group cohesion, participation, and social support (Camacho-Minuche et al., 2021; Mamani, 2019; Mendo-Lázaro et al., 2018; Van Ryzin et al., 2020). According to Ovejero (2018), cooperative learning situations are effective tools for giving and receiving social support, offering students trustworthy peers from whom they can receive both material and emotional help.

Cooperative learning fosters greater interpersonal attraction among students and leads to more positive attitudes and emotions toward peers (Johnson & Johnson, 1990). Students feel more loved, supported, and accepted by others, in line with Boix and Ortega (2020), who identified a link between affective and social relationships and the classroom climate, which, in turn, reduces the likelihood of inappropriate behaviour inside and outside the classroom (Van Ryzin et al., 2020). More recent studies have found positive relationships between the level of cooperation in the classroom and emotions such as trust, pride, enjoyment, and calmness (León-del-Barco et al., 2023). In this regard, a study by Sharifi-Shayan et al. (2020) aimed at determining the effectiveness of cooperative learning on emotional control in children with behavioural problems found that using this methodology can improve their academic motivation and help them regulate their emotions by fostering a sense of cooperation and usefulness.

Our results show that social skills and responsibility in a cooperative classroom are the elements of cooperative learning most closely associated with a lower incidence of externalizing problems among students, with social skills having a greater influence. This is consistent with the ideas of Andrade and Tannock (2014) and Mendo-Lázaro et al. (2018), who advocate for the incorporation of cooperative

learning-based teaching techniques to reduce behavioural and mental health problems.

Regarding responsibility, in cooperative learning situations, each team member is committed to completing their portion of the work and is held accountable for meeting the goals. Cooperative situations grant students greater responsibility and control over their learning, promoting autonomy and independence from the teacher. Based on our data, we agree with León-del-Barco et al. (2019) that through participation in cooperative situations, students learn to be responsible—an essential factor in increased commitment, improved academic outcomes, and enhanced mood. We also align with Manzano-Sánchez et al. (2021), who found that fostering responsibility is associated with improved resilience, prosocial behaviour, and classroom climate. Responsibility strengthens relationships among students and enhances their personal, emotional, and social development, thereby reducing classroom behavioural issues.

In terms of social skills, we found that cooperative learning groups function as training grounds for these abilities. As Camacho-Minuche et al. (2021) state, a cooperative environment promotes peer acceptance and contributes to the development of new social skills. By working cooperatively, students imitate peers (modelling), practice social and communication skills (role-playing, behavioural rehearsal), receive immediate feedback from peers, and apply what they learn in other contexts.

Considering Wang and Liu's (2021) assertion that students with behavioural problems often have deficits in social competence, making it difficult to initiate and maintain positive peer interactions and leading to disruptive behaviour, we agree with Ovejero (2018) that cooperative learning techniques strongly contribute to the improvement of social competence through the development of social skills. Cooperative classrooms foster student communication and interaction. These social interactions enhance trust and social competence, reducing social stress and anxiety. Social skills serve as protective factors in adolescents' lives. As González-Moreno and Molero-Jurado (2022) state, social skills are associated with engagement in healthy lifestyle activities such as physical, musical, and artistic pursuits. They are also linked to emotional intelligence, self-esteem, self-concept, reduced involvement in school violence, and resilience as a key factor in improving mental health (Tacca-Huamán et al., 2020; Trigueros et al., 2020).

This study has some limitations, the most significant being the use of self-report measures for data collection. Regarding self-reports to assess cooperation in the classroom and externalizing problems, as they are informed by students' temporary, subjective perceptions. In future studies, additional instruments that

assess cooperative learning—such as teacher-based tools evaluating cooperative learning management—could complement student reports.

Other limitations stem from the cross-sectional design, which makes it difficult to establish stronger inferences about the relationships between the variables. Future research using quasi-experimental designs could implement cooperative learning interventions in the classroom and analyse their impact on behavioural problems. Finally, it would be ideal to replicate the study with a broader, nationally and internationally representative sample. It would also be valuable to include information on teacher practices, such as their teaching experience and familiarity with cooperative learning methodologies, as well as students' actual use of this educational approach.

To conclude, the analysis of children and adolescents' mental health in relation to the risk of emotional disorders or behavioural problems has become a topic of global research interest and a priority for public health policy. We are aware that behavioural problems in children and adolescents are a significant social concern due to their association with disability, suffering, functional impairment, and the high economic cost they represent for public health systems worldwide.

This study makes important contributions by showing how behavioural problems can be prevented within the classroom. Our findings demonstrate that a cooperative classroom approach is an effective educational response for guiding and managing the behaviour of students with externalizing problems. A cooperative classroom can significantly contribute to students' emotional and psychological well-being. It serves as a powerful tool for giving and receiving social support, providing students with trusted peers who can offer material and emotional assistance. A cooperative classroom fosters responsibility and social skills, which increase confidence and social competence while reducing social stress and anxiety. Therefore, it is essential to promote and motivate teachers to apply this methodology in their classrooms. Implementing, mastering, and dedicating sufficient time to cooperative learning is highly rewarding and generates significant positive outcomes for students.

REFERENCES

Albrecht, J. R., & Karabenick, S. A. (2018). Relevance for learning and motivation in education. *Journal of Experimental Education, 86* (1), 1–10. https://doi.org/10.1080/00220973.2017.1380593

Andrade, B.F., & Tannock, R. (2014). Sustained Impact of Inattention and Hyperactivity-Impulsivity on Peer Problems: Media - ting Roles of Prosocial Skills and Conduct Problems in a Community Sample of Children. *Child Psychiatry & Human Development, 45*(3), 318-328. https://doi.org/10.1007/s10578-013-0402-x

APA (2010). *Publication Manual of the American Psychological Association* (6th Ed). American Psychological Association.

Aronson, E., & Osherow, N. (1980). Cooperation, prosocial behavior, and academic performance. En L. Bickman (Ed.), *Applied Social Psychology Annual*, (Vol. 1, pp. 163-196). Sage

Bermejo, J., Pulido, D., Galmes-Panades, A., Serra P., V. J., & Ponseti, F. (2021). Educación física y universidad: Evaluación de una experiencia docente a través del aprendizaje cooperativo. *Retos, 39*, 90-97. https://doi.org/10.47197/retos.v0i39.77834

Boix, S., & Ortega, N. (2020). Beneficios del aprendizaje cooperativo en las áreas troncales de Primaria: Una revisión de la literatura científica. *ENSAYOS: Revista de la Facultad de Educación de Albacete, 35*(1), 1-13. https://doi.org/10.18239/ensayos.v35i1.1901

Camacho-Minuche, G., Espinoza-Celi, V., & Ulehlova, E. (2021). Cooperative language learning elements to enhance social skills in English classrooms: a case study. Higher Education, *Skills and Work-Based Learning, 11*(5), 1116-1129. https://doi.org/10.1108/HESWBL-08-2020-0176

Danneel, S., Nelemans, S., Spithoven, A., Bastin, M., Bijttebier, P., Colpin, H., & Goossens, L. (2019). Internalizar problemas en la adolescencia: vincular la soledad, los síntomas de ansiedad social y los síntomas depresivos a lo largo del tiempo. *Revista de psicología infantil anormal, 47*(10), 1691-1705. https://doi.org/10.1007/s10802-019-00539-0

Fernández-Río, J., Cecchini, J.A., Méndez-Giménez, A., Méndez-Alonso, D., & Prieto, J.A. (2017). Design and validation of a questionnaire to assess cooperative learning in educational contexts. *Anales de Psicología, 33*(3), 680-688. https://doi.org/10.6018/analesps.33.3.251321

Fonseca-Pedrero, E., Ortuño-Sierra, J., & Pérez-Albéniz, A. (2020). Dificultades emocionales y conductuales y comportamiento prosocial en adolescentes: Un análisis de perfiles latentes. *Revista de Psiquiatría y Salud Mental, 13*(4), 202-212. https://doi.org/10.1016/j.rpsm.2020.01.002

García-Gil, M.A., Fajardo-Bullón, F., & Felipe-Castaño, E. (2022). Análisis del rendimiento académico y la salud mental de los alumnos de educación secundaria según el acceso a los recursos tecnológicos. *Educación XX1, 25*(2), 243-270. https://doi.org/10.5944/educxx1.31833

Gillies, R. (2016). Cooperative Learning: Review of Research and Practice. *Australian Journal of Teacher Education, 41*(3), 39-53. https://doi.org/10.14221/ajte.2016v41n3.3

González-Moreno, A., & Molero-Jurado, M. del M. (2022). Las habilidades sociales y su relación con otras variables en la etapa de la adolescencia: Una revisión sistemática. *Revista Iberoamericana de Psicología, 15*(1), 113-123. https://doi.org/10.33881/2027-1786.rip.15111

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 38*(5), 581-586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Hand, E. D., & Lonigan, C. J. (2022). Examining the relations between Preschooler's externalizing behaviors and academic performance using an S-1 bifactor model. *Research on Child and Adolescent Psychopathology, 50*(5), 577–589. https://doi.org/10.1007/s10802-021-00861-6

Houweling, T. A. J., Oude Groeniger, J., Jansen, P. W., Van Lier, P., Horoz, N., Buil. M., & Van Lenthe, F. J. (2022). Trajectories of socioeconomic inequality in early child development: A cohort analysis. *International Journal for Equity in Health, 21*(1), 1–10. https://doi.org/10.1186/s12939-022-01675-8

Johnson, D. W., & Johnson, R. T. (1990). *Cooperation and competition. Theory and research*. Addison-Wesley.

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (2013). *Cooperation in the classroom* (9th ed.). Interaction Book Company

Johnson, D. W., Johnson, R. T., Roseth, C., & Shin, T. S. (2014). The relationship between motivation and achievement in interdependent situations. *Journal of Applied Social Psychology, 44*(9), 622-633. https://doi.org/10.1111/jasp.12280

Johnson, D. W., & Johnson, R. T. (2018). Aprendizaje cooperativo e inclusión. Impacto de la interdependencia social en los resultados. En J.C. Torrego, L. Rayón, Y. Muñoz, & P. Gómez (Eds), *Inclusión y mejora educativa* (pp. 19-47). Universidad de Alcalá: Servicio de Publicaciones.

Kagan, S. (1994). *Cooperative learning*. Resources for Teachers, Inc.

León-del-Barco, B., Mendo-Lázaro, S., Felipe-Castaño, E., Polo-del-Río, M.I., & Fajardo-Bullón, F. (2017). Potencia de equipo y aprendizaje cooperativo en el ámbito Universitario. *Revista de Psicodidáctica, 22*(1), 9-15. https://doi.org/10.1016/S1136-1034(17)30038-2

León-del Barco, B., Mendo-Lázaro, S., Polo-del-Río, M.I., & Rasskin, I. (2019). University Student´s Academic Goals When Working in Teams: Questionnaire on Academic Goals in Teamwork, 3x2 Model. *Frontiers in Psychology, 10*(2434), 1-11. https://doi.org/10.3389/fpsyg.2019.02434

León-del-Barco, B., Fernández-Rio, J., Rivera, S., & Iglesias-Gallego, D. (2023). Cooperative Learning, Emotions, and Academic Performance in Physical Education: A Serial Multiple Mediation Model. *Educational Psychology, 29*(1), 75-82. https://doi.org/10.5093/psed2023a2

Mamani, R. A. (2019). *Aprendizaje cooperativo y autoestima en los estudiantes del sexto grado de primaria de la Institución Educativa "Planteles de aplicación"-La Cantuta, Lurigancho, 2019.* [Tesis doctoral, Universidad César Vallejo]. Repositorio institucional-UCV. https://hdl.handle.net/20.500.12692/54642

Manzano-Sánchez, D., González-Víllora, S., & Valero-Valenzuela, A. (2021). Aplication of the Teaching Personal and Social Responsibility Model in the Secondary Education Curriculum: Implications in Psychological and Contextual Variables in Students. *International Journal of Environmental Research and Public Health, 18*, 3047. https://doi.org/10.3390/ijerph18063047

Martin-Herz, S. P., McMahon, R. J, Malzyner, S., Chiang, N., & Zatzick, DF (2022). Impact of posttraumatic stress disorder and depressive symptoms on quality of life in adolescents after general traumatic injury. *Journal of Traumatic Stress*, *35*(2), 386-397. https://doi.org/10.1002/jts.22750

Mendo-Lázaro, S., León-del-Barco, B., Felipe-Castaño, E., Polo-del-Río, M. I., & Iglesias-Gallego, D. (2018). Cooperative Team Learning and the Development of Social Skills in Higher Education: The Variables Involved. *Frontiers in Psychology, 9,* 1-11. https://doi.org/10.3389/fpsyg.2018.01536

Mikami, A.Y., & Lorenzi, J. (2011). Gender and Conduct Problems Predict Peer Functioning among Children with Attention-Deficit/Hyperactivity Disorder. *Journal of Clinical Child & Adolescent Psychology, 40* (5), 777-786. https://doi.org/10.1080/15374416.2011.597089

Navarro-Patón, R., Lago-Ballesteros, J., & Basanta-Camiño, S. (2019). Conductas prosociales de escolares de educación primaria: influencia de los juegos cooperativos. *SPORT TK: Revista EuroAmericana de Ciencias del Deporte, 8*(2), 33-37. https://doi.org/10.6018/sportk.401081

Ovejero, A. (2018). *Aprendizaje Cooperativo Crítico: Mucho m*ás que *una e*ficaz *t*écnica *pedagógica*. Pirámide.

Polo-del-Río, M.I., Mendo-Lázaro, S., Fajardo-Bullón, F., & León-del-Barco, B. (2017). Una intervención en aprendizaje cooperativo sobre el perfil del observador en la dinámica bullying. *Universitas Psychologica, 16*(1), 1-13. http://dx.doi.org/10.11144/Javeriana.upsy16-1.iacp

Rivera-Pérez, S., León-del-Barco, B., González-Bernal, J., & Iglesias-Gallego, D. (2021). Aprendizaje cooperativo y metas de aproximación en educación física: El rol discriminante de la responsabilidad individual. *Revista de Psicodidáctica, 26*, 78-85. https://doi.org/10.1016/j.psicod.2020.11.001

Salavera, C., & Usán, P. (2019). Influencia de los problemas internalizantes y externalizantes en la autoeficacia en estudiantes de Secundaria. *Revista de Investigación Educativa, 37*(2), 413-429. http://dx.doi.org/10.6018/rie.37.2.323351

Sampaio, L., & Flores, C. (2018). Relación entre conductas externalizantes en la infancia y rasgos de personalidad en la vida adulta. *Revista de Psicología Clínica con niños y adolescentes*, *5*(3), 36-41. https://doi.org/10.21134/rpcna.2018.05.3.5

Sharifi-Shayan, F., Entesar-Foumani, G. H., & Hejazi, M. (2020). The Effectiveness of Collaborative Learning Method on Academic Motivation and Emotion Control in Children with Attention Deficit / Hyperactivity Disorder. *Journal of Child Mental Health, 6*(4), 74-84. http://dx.doi.org/10.29252/jcmh.6.4.8

Slavin, R. E. (2012). Classroom applications of cooperative learning. In K. R. Harris, S. Graham, T. Urdan, A. G. Bus, S. Major, & H. L. Swanson (Eds.), *APA educational psychology handbook, Application to learning and teaching* (Vol. 3, pp. 359–378). American Psychological Association. https://doi.org/10.1037/13275-014

Sorcher, L. K., Goldstein, B. L., Finsaas, M. C., Carlson, G. A., Klein, D. N., & Dougherty, L. R. (2022). Preschool irritability predicts adolescent psychopathology and functional impairment: A 12-year prospective study. *Journal of the American Academy of Child and Adolescent Psychiatry, 61*(4), 554–564. https://doi.org/10.1016/j.jaac.2021.08.016

Sullivan, A. D. W., Forehand. R., Vreeland, A., & Compas, B. E. (2022). Does parenting explain the link between cumulative SES risk and child problems in the context of parental depression? *Child Psychiatry and Human Development, 53*(2), 330–341. https://doi.org/10.1007/s10578-021-01130-9

Tacca-Huamán, D.R., Cuarez-Cordero, R., & Quispe-Huaycho, R. (2020). Habilidades Sociales, Autoconcepto y Autoestima en Adolescentes Peruanos de Educación Secundaria. *International Journal of Sociology of Education, 9*(3), 293-324. https://doi.org/10.17583/rise.2020.5186

Trigueros, R., Sánchez-Sánchez, E., Mercader, I., Aguilar-Parra, J.M., López-Liria, R., Morales-Gázquez, M.J., Fernández-Campoy, J.M., & Rocamora, P. (2020). Relationship between Emotional Intelligence, Social Skills and Peer Harassment. A Study with High School Students. *International Journal of Environmental Research and Public Health, 17(*12), 4208. https://doi.org/10.3390/ijerph17124208

Van Ryzin, M. J., Roseth, C. J., & Biglan, A. (2020). Mediators of Effects of Cooperative Learning on Prosocial Behavior in Middle School. *International Journal of Applied Positive Psychology, 5*(1-2), 37-52. https://doi.org/10.1007/s41042-020-00026-8

Wang, Y., & Liu, Y. (2021). The development of internalizing and externalizing problems in primary school: Contributions of executive function and social competence. *Child Development, 92*(3), 889-903. https://doi.org/10.1111/cdev.13462