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Application of Cooperative Learning and Its Relation to 3 × 2 Achievement Goals in Teachers

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Abstract: Cooperative learning has been shown to be a highly beneficial teaching methodology for student learning and motivation. It also has huge benefits for teaching, although there is still a widespread lack of knowledge on how to implement this highly structured series of techniques. In this study, teacher motivation was tested under the 3 × 2 achievement goal model to see how it relates to the application of CL in the classroom using sequential generalized estimating equation models. This theoretical model had not previously been applied to teacher motivation, and these teachers, from different educational stages and different schools, had received specific training in CL and had been monitored for one year. The results showed a high orientation towards self–approach goals, with the influence of having received such training, having more experience in applying CL and it being facilitated at the primary education stage. The implications of these results are discussed, as various facilitating factors for the use of CL in the classroom can be found.

Keywords: 3 × 2 achievement goals; cooperative learning; education; motivation; teachers

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1. Introduction

Cooperative learning (CL) is a method of working with students, where they work together in groups to achieve a set of joint learning goals (Johnson & Johnson, 1999). Among the different systems that exist for working in groups in a teaching–learning context, it should be noted that CL has specific characteristics, i.e., in order to speak of CL, a series of criteria must be met, such as the following (Johnson & Johnson, 1999): (1) Positive interdependence: one of the defining points of CL is that success as a group can only be achieved if the members of the group succeed individually; this idea is based on Johnson and Johnson's theory of social interdependence (Johnson & Johnson, 2002). (2) Individual accountability: according to this criterion, each person has an individual responsibility to fulfil. (3) Face-to-face promotive interaction: Group members should encourage the exchange of information and support among themselves. Here, the teacher's influence is key to encourage this interpersonal behaviour (Dzemidzic Kristiansen et al., 2019). (4) Social skills: this refers to the tools that help members to work as a team, such as leadership, decision-making, communication and conflict resolution (Johnson & Johnson, 1999). (5) Group processing: This criterion consists of a series of actions related to the self-regulation and self-assessment of the group itself. Thus, there is an evaluation of the learning carried out at individual and group level, an evaluation of the other members (co-evaluation) and self-evaluation (Azorín, 2018).

As can be seen, this methodology involves a certain amount of complexity. These characteristics make it possible to differentiate CL from other group learning approaches, such as collaborative learning. In this regard, Yang (2023) made a detailed comparison between these two types of learning that allows a better understanding of the roots of CL. He specifies that this methodology has its origins in social psychology (Johnson & Johnson's theory of positive interdependence was mentioned above), understanding that learning cannot occur from an individualistic perspective (such as competition or individual learning); likewise, it focuses on learning processes rather than results and also requires a high degree of structuring. In this regard, there are different techniques that can be used and that allow it to be applied in a systematised way, such as Jigsaw, Group Investigation, or Co-op Co-op, among many others.

There is a long academic track record that has shown the benefits of CL at various levels. On the one hand, it is a methodology that has a positive impact on learning, generating a better internalisation of concepts and allowing a greater achievement of academic goals (Bećirović et al., 2022; Jolliffe, 2015b; Odehova et al., 2022; Prieto-Saborit et al., 2021, 2022a; Raviv et al., 2019; Slavin, 1983; Yuliani et al., 2021). It also improves student motivation towards learning (Bächtold et al., 2023; Bećirović et al., 2022; Brown, 2021; Fernandez-Rio et al., 2017) and, in turn, fosters the development of other non-academic skills, such as social skills (Suryadi et al., 2024). Other studies have linked it to the improvement of creative skills (Segundo-Marcos et al., 2023; Siew et al., 2017) and also of the use of executive functions (Segundo-Marcos et al., 2022). Another interesting effect is related to psychosocial factors. A recent study by Van Ryzin et al. (2023) has linked the use of CL in schools to a lower prevalence of adolescents showing substance abuse, meaning that these skills do not only apply to the academic context but are generalised to other areas of life, such as relations. Similarly, it is a successful technique for training in adult workplace settings (Gilardi et al., 2021; Hebles et al., 2019), as well as among university students (Agonafir, 2023; Keramati & Gillies, 2021; Larraz et al., 2017). In fact, a bibliometric analysis recently conducted highlights the rapid growth of interest in this topic over the past 5 years (Syamsi, 2024).

Despite the known benefits of CL for students, the frequency of systematic and correct application of CL is still low. In this regard, Adl-Amini et al. (2024) observed that few teachers incorporated the five fundamental elements of CL, which significantly constrained the effectiveness of its application. In addition to confusion with other methodologies, the reasons for the unsuccessful application of these techniques have to do with poor teacher planning and a consequent tendency to apply CL techniques spontaneously (Garfield, 2013; Thanh, 2011). Many research studies describe CL as a challenge for teachers (Buchs et al., 2017; Ghaith, 2020; Gillies & Boyle, 2010; Hortigüela-Alcalá et al., 2020), as the difficulties or obstacles they encounter are notorious. Some of those described are scarce knowledge of the methodology; a lack of training in CL in school and university education; difficulty working in groups; problems in organising work and managing time; and doubts about how to adapt the methodology to the syllabus (Buchs et al., 2017; Gillies & Boyle, 2010; Prieto-Saborit et al., 2016). Cultural variables also have an impact. For example, in areas such as physical education, where the use of CL is widespread, teachers have found it difficult to deal with the competitive model that students are accustomed to (Hortigüela-Alcalá et al., 2020). In other cases, it has been difficult to move the involved actors (teachers and students) away from the classical teaching model (Keramati & Gillies, 2022; Thanh, 2011), especially teachers who have been implementing classical methodologies for a longer time (Krečič & Grmek, 2008).

However, all these difficulties result in a negative attitude in the teacher towards CL, which has been a key study variable in several studies (Gillies, 2004; Prieto-Saborit et al., 2016; Slavin et al., 2013). This attitude has been found to be mainly and directly influenced

by a lack of knowledge about CL techniques, such that adequate training in this field has been found to improve teachers' attitudes and, therefore, their motivation towards the implementation of CL (Filippou et al., 2022; Koutselini, 2008; Prieto-Saborit et al., 2016; Thoonen et al., 2011). Another factor that has been seen as a facilitator is peer support. In recent research, Liebech-Lien (2021) used the communities of practice model to create groups of teachers that could support the implementation of CL, showing its positive value.

As a result, there has been a growing interest in the scientific literature in exploring the factors that facilitate the teacher's work when using CL, as well as the motivational processes that lead to overcoming these challenges (Filippou et al., 2022; Klaeijsen et al., 2018; Menéndez-Espina et al., 2025; Thoonen et al., 2011). Recent studies have even shown that teacher motivation is key to both ensuring the implementation of CL and the transmission of this motivation to students (Zou et al., 2024).

There are several theoretical models that have described motivation. In the sphere of education, in addition to Ryan and Deci's self-determination theory (Deci & Ryan, 1985), one of the theoretical models of relevance is that of achievement goals. Achievement goals were defined as the reasons and purposes that govern behaviour (Ames, 1992), or as the competence-based objective used to achieve a goal (Elliot, 1999). Méndez-Giménez et al. (2012) point out that, in this theoretical framework, the main driver of behaviour is the desire to demonstrate skill or competence. For this reason, it is a theory that has been widely used in academic and sports settings (Gorozidis & Papaioannou, 2016; Méndez-Giménez et al., 2012; Mendo-Lázaro et al., 2022).

As a result of understanding this construct, over the years, different theoretical models have been built around it, where Nicholls' achievement goal theory (Nicholls, 1989) is the starting point, together with Dweck (1986) and Ames (1992). The evolution of the theory of achievement goals has revolved around the dimensions or types of goals that made up the construct, initially being two and becoming up to six goals in the latest approaches, resulting from the interaction between two axes that describe the competence of the person (Elliot et al., 2011). This is called the 3×2 achievement goal model and is made up of the following elements

On the one hand, there is the definition component. This is composed of three standards used to define competence; i.e., they assess whether the task is being performed well or poorly. These three are the absolute standard, where goals are set based on the task itself; the intrapersonal standard, which defines goals based on the self; and the interpersonal standard, which defines goals based on others. Thus, according to the task, it is being performed well or poorly depending on its requirements; according to the self, the task is being performed well or poorly depending to how the person has performed it in the past or believes they can perform it in the future; and according to the other, the task is being performed well or poorly based on the consideration of other people. On the other hand, there is the valence component of competence. Valence refers to the positive or negative character that directs the behaviour, in that it can be directed towards achieving success (positive valence or approach) or avoiding failure (negative valence or avoidance).

The combination of these two components results in six achievement goals: (1) the task–approach goal, focused on performing the task correctly; (2) the self–approach goal, focused on performing the task well based on one's own competency; (3) the other–approach goal, to perform the task correctly on the basis of the competence of others; (4) the task–avoidance goal, focused on avoiding task failure; (5) the self–avoidance goal, related to avoiding failure due to a lack of competence; and (6) the other–avoidance goal, consisting of avoiding task failure on the basis of the competence of others.

The relationship between achievement goal theory and the educational context has been previously established. In this regard, Mascret et al. (2015) developed an assessment

instrument specifically designed to evaluate this construct in teachers. Concerning the link between the 3 × 2 achievement goal model and cooperative learning (CL), some studies have explored achievement goals observed in students whose classrooms implemented CL, though under alternative theoretical frameworks, such as self-determination theory (Mendo-Lázaro et al., 2022; Rivera-Pérez et al., 2021a, 2021b). For instance, a recent study identified a relationship between intrinsic regulation toward school tasks and the use of CL strategies in the classroom among teachers at various educational levels. Similarly, Méndez-Giménez et al. (2017, 2018) found a positive relationship between self and task approach goals and self-determined motivation (in terms of Deci & Ryan's theory). Since this type of intrinsic motivation is related to the use of innovative methodologies (Filippou et al., 2022; Gorozidis & Papaioannou, 2016; Klaeijsen et al., 2018), indirectly, this type of goal could also predict the implementation of CL. Supporting this notion, Thoonen et al. (2011) found teachers' sense of self-efficacy to be the motivational factor that most explained their involvement in training activities and the implementation of innovative learning practices. Furthermore, in this study, it was found that this involvement in professional upskilling was related to the internalisation of the school's goals into personal goals.

1.1. This Study

This study aims to delve deeper into the motivational factors that facilitate the application of CL in the classroom by teachers. Among the innovative elements provided is that the 3 × 2 achievement goal model will be used, which is little used in the context of CL, and also applied to teachers. It will also be contextualised in different educational stages. Finally, the participating teachers have received rigorous and continuous training in CL, which has been completed with extensive support to implement it in their classrooms. This research is part of a large-scale CL implementation project in Spain. A programme based on CL pedagogy was developed by a national educational institution with the aim of implementing this methodology in all its schools in an organised and structured way. Thus, one of the strengths lies in the rigorous training and application of CL in the schools and in its adaptation to each of the educational stages where the teachers taught.

1.2. Objectives and Hypotheses

The aim of this study was to learn about the level of implementation of CL during a school year, after the teachers had received prior and ongoing training, and its relationship with gender, educational stages, years of teaching experience, years that teachers have been systematically implementing CL in the classroom and hours of previous training in CL. At the same time, we were interested in finding out the relationship between the degree of development of CL in classrooms and 3 × 2 goal orientations.

The following hypotheses were established: (H1) initial and continuous training, measured in hours of previous training in cooperative learning, will have a positive impact on the implementation of cooperative learning in the classroom; (H2) the 3 × 2 goal orientations of teachers will influence the degree of implementation of CL; and (H3) this relationship will be influenced by other variables, such as the educational level where the class is taught, the years of teaching experience, the years that CL has been applied and gender.

2. Materials and Methods

2.1. Participants

The sample consisted of 1298 teachers (487 male and 811 female), of whom 114 were early childhood teachers, 558 were generalist primary school teachers and 576 were secondary school teachers in the following subject areas: physical education (33), foreign

language (87), arts and humanities (245) and science (211). They ranged in age from 24 to 64 years old and taught in a total of 60 schools in the 25 provinces of Spain. Table 1 shows the socio-demographic and educational characteristics in relation to the level of cooperative learning developed in the classes. These schools belonged to the same educational network, and therefore, a convenience sampling technique was used. This sampling method is considered appropriate when there is homogeneity in one or more participant characteristics relevant to the focus of the study (Jager et al., 2017). For this purpose, prior to data collection, information was provided to the coordinator of each school about the protocol to be followed in order to complete the questionnaires. In May, before the end of the academic year, teachers accessed the questionnaire via the online link provided by the researchers and were informed that the process and the data obtained would be confidential. The consent of the schools and the Ethics Committee of the University of Oviedo was obtained.

Table 1. Socio-demographic variables in relation to cooperative learning in the classroom.

	N	CL	95% CI
Overall	1298	4.01	3.98–4.05
Gender			
Male	487	3.91	3.85–3.97
Female	811	4.07	4.03–4.12
Year			
Early Childhood Education	114	3.86	3.70–4.01
Primary Education	558	4.13	4.08–4.18
Secondary Education	576	3.92	3.87–3.98
Area of knowledge			
Physical Education	33	4.00	3.77–4.21
Arts and Humanities	245	3.92	3.84–4.00
Foreign language	87	3.99	3.87–4.13
Science	211	3.91	3.82–4.00
District			
Andalusia	242	3.89	3.80–3.98
Bilbao	264	3.92	3.83–3.99
Catalonia	185	4.07	3.97–4.16
Valencia	352	4.14	4.08–4.21
Valladolid	255	4.00	3.93–4.08

Note: CL = mean response in the items of the Teachers' Cooperative Learning Questionnaire, with a minimum of 1 and a maximum of 5; CI = Confidence Interval.

2.2. Procedure

For the implementation of the project, actions were carried out in several phases. First, various contacts were established between the managers of the academic institution and the members of our research group in order to structure the process and obtain the corresponding permissions for data collection and analysis. This procedure lasted 3 months.

Prior training in CL for teachers was planned. As there were a large number of schools, the training was carried out in a total of 5 geographical locations, which were called sectors: Andalusia, Bilbao, Catalonia, Valencia and Valladolid. All participating teachers travelled to the nearest sector. The same training programme was given in all of them, and its duration was 20 h. Among the contents were the design of activities that encouraged the establishment of interdependence of tasks, guaranteeing individual responsibility, the construction of complex strategies to promote participation, the use of techniques for the development of social skills and the design of evaluation criteria and rubrics to measure student learning. We also worked on the formation of small heterogeneous groups and on guaranteeing equal opportunities within them; i.e., the themes revolved around the

characteristics of CL. In addition, the used methodology was also CL itself, meaning that they experienced what they were learning, an approach that has been identified as effective in previous research (Jolliffe, 2015a).

Once the training was completed, the teachers applied CL in their schools for one school year. In turn, the research team provided monitoring and support. For this purpose, a hierarchical control model was established, consisting of a national commission responsible for the project, a coordinator in each of the training sectors, a coordinator in each province and a coordinator in each of the schools. Regular meetings were also held between coordinators and teachers, as well as between the different commissions. In these meetings, actions were established for the evaluation of the process but also for information training (support and advice). In short, this training and subsequent monitoring was of a homogeneous, structured and rigorous nature that guaranteed the equivalence of the application of CL in all schools.

2.3. Measurements

2.3.1. Teachers' Cooperative Learning Questionnaire (TCLQ), by Prieto-Saborit et al. (2022b)

This test measures the level of application of CL from the teachers' perspective. It consists of 19 items with a 5-point Likert-type response format. The items are grouped into 5 factors related to the elements that define cooperative learning: positive interdependency (i.e., "Students talk about their work to assess, correct, and improve it"), stimulating interaction (e.g., "Students work directly with each other"), individual responsibility (e.g., "Students listen to classmates' ideas, opinions, and points of view"), group processing (e.g., "The members of the group are different, which enriches the work") and social skills (e.g., "Students take group decisions between the members of the group"). It has a 5-point Likert-type response format, ranging from "Strongly disagree" to "Strongly agree". In the original validation, the scale was administered to early childhood, primary and secondary school teachers. A reliability of 0.95 was obtained using Cronbach's Alpha index and 0.96 using McDonald's w test. The consistency of the subscales was found to be between 0.78 and 0.91.

2.3.2. The 3 × 2 Achievement Goal Questionnaire for Teachers (AGQ-T), by Mascret et al. (2015)

This questionnaire measures the different achievement goals that teachers can pursue in their teaching work. It consists of 18 items grouped into 6 dimensions (where each dimension is made up of 3 items). The questionnaire begins with the statement: "With my classes this year, I try …", which precedes all items. The division of the dimensions is as follows: task–approach goal (TAG) (e.g., …to enable my students to succeed); task–avoidance goal (e.g., …to avoid that my students fail); self–approach goal (e.g., …to teach more effectively than before); self–avoidance goal (e.g., …to avoid being worse than before in my teaching); other–approach goal (e.g., …to teach better than other teachers); other–avoidance goal (e.g., …to avoid being less effective than other teachers).

The reliability indices in the original study, measured by Cronbach's alpha and the present study, were, respectively, as follows: task–approach goals: 0.83, 0.76; task–avoidance goals: 0.87, 0.79; self–approach goals: 0.88, 0.81; self–avoidance goals: 0.94, 0.79; other–approach goals: 0.91, 0.90; and other–avoidance goals: 0.93, 0.84.

2.3.3. Other Measurements

In addition to the two scales mentioned above, socio-demographic measurements were also taken, such as age, gender and the province where they worked. Information was also collected on years of teaching experience in general and of working with CL in particular, the hours of training received and the educational stage where they teach. Although in the

context of the project all teachers received the same hours of training, this question was asked to find out if there were any professionals who had received additional training.

2.4. Study Design and Data Analysis

The present study is an ex post facto prospective study (Montero & León, 2007). This group includes research in which the limitations for contrasting causal relationships are due to the impossibility of manipulating the independent variable, in this case, the received training programme and the impossibility of establishing causal relationships due to not having carried out measurements prior to the intervention. In this study, a single group was used, where a key group of participants was chosen because they all had the same characteristic. These are teachers who have taught the CL technique after having received specific training.

First, descriptive analyses and bivariate correlations were performed. Subsequently, two sequential generalised estimating equation models (GEEs) were tested. These analyses link the random distribution of the dependent variable, in this case the CL developed in the classes (the distribution function) to the systematic part (non-random or linear predictor) through a function called the link function (McCullagh & Nelder, 2019). The first model included as predictor variables gender, years of teaching experience, hours of CL training, years that teachers have been working in CL, educational stage and district. Model 2, in addition to the variables in model 1, included the 6 dimensions of the achievement goals questionnaire for teachers.

3. Results

3.1. Preliminary Analyses

The descriptive analyses showed that CL was being applied regularly in the classes. The highest goal orientation is the self–approach goal, followed by the self–avoidance goal, and the lowest are the other–approach goal and the other–avoidance goal. The highest correlations between CL and teachers' achievement goal orientations are observed in the two self goal dimensions (approach and avoidance). All correlations are significant except between CL and the other–approach goal (Table 2).

Table 2. Descriptive analyses and bivariate correlations in CL and 3 × 2 teacher goal orientations.

	M	SD	1	2	3	4	5	6
1 Cooperative learning	4.01	0.65	1.00					
2 Task–approach goal	3.43	0.83	0.14 **	1.00				
3 Self–approach goal	4.19	0.70	0.28 **	0.47 **	1.00			
4 Other–approach goal	2.04	0.92	0.01	0.36 **	0.07 **	1.00		
5 Task–avoidance goal	3.69	0.85	0.15 **	0.57 **	0.62 **	0.26 **	1.00	
6 Self–avoidance goal	3.74	0.87	0.20 **	0.44 **	0.66 **	0.20 **	0.70 **	1.00
7 Other–avoidance goal	2.86	1.05	0.09 **	0.39 **	0.34 **	0.57 **	0.52 **	0.47 **

Note. ** $p < 0.01$.

3.2. Sequential Generalised Estimating Equation Models

The first model shows that female teachers perceive a greater degree of development of cooperative work in their classrooms than male teachers. It is also observed that those who have been working on CL for more years implement CL strategies to a greater extent. However, the relationship between years of teaching experience and CL is precisely the opposite: those who have been teaching for more years develop CL strategies to a lesser extent than teachers with less professional experience. Differences are also observed according to the number of hours of training; a positive relationship is observed between

the number of hours of training and the cooperative learning developed in the classroom. Differences are also observed according to the district to which they belong (Table 3).

Table 3. Generalised estimating equations taking cooperative learning as dependent variable.

Factor	Model 1			Model 2		
	CL AOR	95% CI	*p*-Value	CL AOR	95% CI	*p*-Value
Gender						
Male	0.859	0.798–0.924	0.000	0.912	0.849–0.980	0.012
Female	1.00			1.00		
Stage						
Early Childhood Education	0.936	0.821–1.07	0.330	1.07	0.941–1.22	0.294
Primary Education	1.24	1.15–1.34	0.000	1.24	1.16–1.34	0.000
Secondary Education	1.00			1.00		
District						
Andalusia	0.959	0.856–1.07	0.469	0.944	0.846–1.05	0.305
Bilbao	0.937	0.840–1.04	0.237	0.926	0.833–1.03	0.151
Catalonia	1.05	0.926–1.18	0.472	1.00	0.890–1.12	0.987
Valencia	1.13	1.02–1.25	0.018	1.10	0.998–1.22	0.056
Valladolid	1.00			1.00		
Years working with CL	1.04	1.02–1.07	0.001	1.04	1.02–1.06	0.001
Years of teaching experience	0.944	0.921–0.968	0.000	0.942	0.919–0.965	0.000
Training hours in CL	1.10	1.04–1.17	0.002	1.10	1.04–1.16	0.001
Goal orientations						
Task—approach goal				1.03	0.983–1.09	0.192
Self—approach goal				1.23	1.15–1.32	0.000
Other—approach goal				0.972	0.929–1.02	0.227
Task—avoidance goals				0.954	0.896–1.02	0.137
Self—avoidance goal				1.05	0.987–1.11	0.129
Other—avoidance goal				1.03	0.981–1.07	0.265

Note. AOR = Adjusted Odds Ratio; CI = Confidence Interval.

When the 3 × 2 teacher goal orientations are introduced, the only one that significantly predicts CL is the self–approach goal. Of the remaining variables that were predictive in model 1, they continue in model 2 except for geographical area (Table 3).

4. Discussion

The aim of this work was to study the achievement goals of teachers that are most associated with the implementation of CL in the classroom, linked to several socio-demographic variables. In general, it reaffirms the relevance of receiving prior training for an adequate implementation of CL and that it should not be the result of an improvised approach through unstructured group work. In this study, the teachers had received rigorous training in the use and application of CL in the classroom, which differs from other research where the application of this technique depended on the teachers' own perception of its correct implementation. The results agree with the research carried out in this field to date, where it was highlighted that training in this methodology implies an improvement in the teachers' attitudes and also their motivation (Filippou et al., 2022; Koutselini, 2008; Prieto-Saborit et al., 2016; Thoonen et al., 2011). The fact that the training, in addition to a series of agreed hours, involved follow-up and support from experts in the subject, upholds the view that peer support aids in the proper use of CL, as Liebech-Lien saw with communities of practice (2021). This could play a key role in dealing with the obstacles that generate fear in teachers (Gillies & Boyle, 2010; Hortigüela-Alcalá et al., 2020). Thus,

hypothesis 1 is considered to be fulfilled. It predicted that initial and ongoing training, measured in hours of prior training in cooperative learning, would have a positive impact on the implementation of cooperative learning in the classroom. As has been seen, the hours of training received in CL, as well as the years of experience with this methodology, predict an adequate and successful use of CL in the classroom, in line with previous studies (Gorozidis & Papaioannou, 2014; Pons et al., 2013; Prieto-Saborit et al., 2022a). Consequently, employing CL as the method of instruction for training in the technique itself is considered appropriate, as evidenced by Jolliffe (2015a).

Another hypothesis, hypothesis 2, predicted that teachers' 3 × 2 goal orientations would influence the degree of CL implementation. In this respect, a relationship was found between one of the achievement goals, namely the self–approach goal, and CL. Therefore, teachers who implemented CL with a higher level and success were motivated to improve on their previous performance and execution. The motivational model used as a theoretical framework was the achievement goal model (Elliot, 1999), specifically the 3 × 2 model (Elliot et al., 2011), where the individual seeks to achieve success on the basis of their own competence, i.e., to improve on their previous performance. The fact that the achievement goal that best predicts CL is the self–approach goal has several explanations. It has been shown that approach goals are more adaptive than avoidance goals, and this is also linked to higher life satisfaction (Méndez-Giménez et al., 2017). Likewise, approach goals related to the self are more closely connected to self-determined regulation, i.e., the highest level of intrinsic motivation within Deci and Ryan's model (Deci & Ryan, 1985). This motivation leads to a higher likelihood of teachers implementing innovative strategies in the classroom (Gorozidis & Papaioannou, 2014; Klaeijsen et al., 2018), such as CL. In this sense, it has been shown that motivation is conditioned by a positive perception of professional practice where academic and social skills can be fostered, as occurs in cooperative environments (Cañabate et al., 2021). In addition, the use of this methodology is related to a greater sense of self-efficacy on the part of teachers (Calkins et al., 2024; Fives & Buehl, 2016), which again implies a greater tendency to improve their teaching practices (Hussain et al., 2022; Thoonen et al., 2011).

Finally, hypothesis 3 proposed that this relationship between achievement goals and the implementation of CL would be influenced by other variables, such as the level of education where the class is taught, years of teaching experience, years of implementation of CL and gender. It has been seen that, as well as the hours of previous training, the number of years working with CL has an influence, showing that a greater mastery of the technique improves its implementation. In this sense, Gillies and Boyle (2010) indicated that the use of CL improved the teacher's confidence. However, having more years of teaching experience hinders the use of CL, as had already been seen in studies such as Prieto-Saborit et al. (2016) and Krečič and Grmek (2008). This relationship also occurs with other innovative methodologies (Gorozidis & Papaioannou, 2014, 2016; Klaeijsen et al., 2018).

With regard to the level of education where classes are taught, it has previously been shown that the educational stage they work with does have an influence. In this regard, teachers reported greater ease of implementation in primary education (Adl-Amini et al., 2024; Kyndt et al., 2013). Some of these studies suggest that this may be due to the fact that these are stages where teachers spend more hours with the same students than in secondary education. It has also been suggested that the low involvement and motivation of secondary school teachers regarding cooperative methodologies may be due to the high curricular demands and nature of the content at this stage, which often forces them to rely on traditional methods (Cabanillas-García, 2025). Finally, another variable that has influenced the use of CL, both with the achievement goals present or not in the model, is gender. There are previous studies on gender differences in students but not in teachers. It

has recently been reported that women rate all categories of cooperative learning higher, with the exception of individual responsibility in a study with trainee teachers (Puiggali et al., 2023). In order to explore the reasons for this relationship in more depth, it is suggested that further studies should be carried out applying a gender perspective, to learn about the possible factors involved.

This research offers several contributions. On a theoretical level, it provides insight into teachers' perspectives on the use of CL through the lens of a motivational theory model. On a technical level, this study confirms the effectiveness of CL training not only for its implementation but also for doing so in a way that is both successful and motivating for teaching staff. Furthermore, the creation of groups and support figures proved to be more effective than engaging in training activities individually. Another important source of support was the schools themselves, which belonged to the same consortium and had all committed to the use of CL in their classrooms. Therefore, this methodology can be applied in other educational institutions, offering teachers a network of peers to rely on for mutual support. At the university level, the use of CL techniques in the training of future teachers appears to be a promising strategy to familiarize them with this approach and promote its subsequent implementation in their own classrooms. Finally, in terms of educational policy, raising awareness of this and other well-established methodologies should be a priority in aligning school education with current demands. Pilot experiences such as the one presented here serve as a valuable source of evidence to inform innovative, research-based educational policies (Slavin, 2008).

However, this research also has some limitations. It would be interesting to know the motivation and achievement goals most present in teachers prior to receiving CL training, in order to compare it with training through a quasi-experimental design. Likewise, the differences between male and female teachers have not been previously explored in terms of the implementation of CL, so it is an important field of study for the future. As future lines of research, it would be also relevant to further explore how peer support allows for a better approach to implementing CL in the classroom, overcoming the presented barriers and increasing positive attitudes and access to the necessary training.

5. Conclusions

This research has shown that people with self–approach goals regarding their teaching practice tend to show a better and more successful application of CL in the classroom. That is, their motivation is directed towards improving their competence. Moreover, it is observed that primary education teachers do so in a differentiated way, particularly after having received more hours of training in CL or having more experience implementing this methodology. The 3×2 achievement goal model has been used, where there is a relationship between approach and avoidance goals with respect to the self, the task and others. Likewise, the focus was on the role of teachers in the success of CL. Specifically, these professionals had received rigorous training in CL with follow-up support for its correct implementation in the classroom, which has allowed for greater robustness of the obtained conclusions.

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References

Adl-Amini, K., Völlinger, V. A., & Eckart, A. (2024). Implementation quality of cooperative learning and teacher beliefs—A mixed methods study. *European Journal of Psychology of Education*, *39*(3), 2267–2281. [CrossRef]

Agonafir, A. M. (2023). Using cooperative learning strategy to increase undergraduate students' engagement and performance. *Educational Action Research*, *31*(5), 981–997. [CrossRef]

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*(3), 261–271. [CrossRef]

Azorín, C. (2018). El método de aprendizaje cooperativo y su aplicación en las aulas. *Perfiles Educativos*, *40*(161), 161. [CrossRef]

Bächtold, M., Roca, P., & De Checchi, K. (2023). Students' beliefs and attitudes towards cooperative learning, and their relationship to motivation and approach to learning. *Studies in Higher Education*, *48*(1), 100–112. [CrossRef]

Bećirović, S., Dubravac, V., & Brdarević-Čeljo, A. (2022). Cooperative learning as a pathway to strengthening motivation and improving achievement in an EFL classroom. *Sage Open*, *12*(1), 21582440221078016. [CrossRef]

Brown, C. L. (2021). Literature review: Effect of cooperative learning on intrinsic motivation. *International Journal of Research and Scientific Innovation*, *8*(7), 1–7. [CrossRef]

Buchs, C., Filippou, D., Pulfrey, C., & Volpé, Y. (2017). Challenges for cooperative learning implementation: Reports from elementary school teachers. *Journal of Education for Teaching*, *43*(3), 296–306. [CrossRef]

Cabanillas-García, J. L. (2025). The application of active methodologies in Spain: An investigation of teachers' use, perceived student acceptance, attitude, and training needs across various educational levels. *Education Sciences*, *15*(2), 210. [CrossRef]

Calkins, L., Wiens, P., Parker, J., & Tschinkel, R. (2024). Teacher motivation and self-efficacy: How do specific motivations for entering teaching relate to teacher self-efficacy? *Journal of Education*, *204*(2), 427–438. [CrossRef]

Cañabate, D., Gras, M. E., Serra, T., & Colomer, J. (2021). Cooperative approaches and academic motivation towards enhancing pre-service teachers' achievement. *Education Sciences*, *11*(11), 705. [CrossRef]

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, *41*(10), 1040–1048. [CrossRef]

Dzemidzic Kristiansen, S., Burner, T., & Johnsen, B. H. (2019). Face-to-face promotive interaction leading to successful cooperative learning: A review study. *Cogent Education*, *6*(1), 1674067. [CrossRef]

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*(3), 169–189. [CrossRef]

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 × 2 achievement goal model. *Journal of Educational Psychology*, *103*(3), 632–648. [CrossRef]

Fernandez-Rio, J., Sanz, N., Fernandez-Cando, J., & Santos, L. (2017). Impact of a sustained cooperative learning intervention on student motivation. *Physical Education and Sport Pedagogy*, *22*(1), 89–105. [CrossRef]

Filippou, D., Buchs, C., Quiamzade, A., & Pulfrey, C. (2022). Understanding motivation for implementing cooperative learning methods: A value-based approach. *Social Psychology of Education*, *25*(1), 169–208. [CrossRef]

Fives, H., & Buehl, M. M. (2016). Teacher motivation: Self-efficacy and goal orientation. In *Handbook of motivation at school* (2nd ed.). Routledge.

Garfield, J. (2013). Cooperative learning revisited: From an instructional method to a way of life. *Journal of Statistics Education*, *21*(2), 1–9. [CrossRef]

Ghaith, G. M. (2020). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues in Educational Research*, *28*(2), 385–404. [CrossRef]

Gilardi, L., Marino, M., Fubini, L., Bena, A., Ferro, E., Santoro, S., Tosco, E., & Pasqualini, O. (2021). The community of practice: A method for cooperative learning of occupational health and safety inspectors. *European Journal of Investigation in Health, Psychology and Education*, *11*(4), 1254–1268. [CrossRef]

Gillies, R. M. (2004). The effects of communication training on teachers' and students' verbal behaviours during cooperative learning. *International Journal of Educational Research*, *41*(3), 257–279. [CrossRef]

Gillies, R. M., & Boyle, M. (2010). Teachers' reflections on cooperative learning: Issues of implementation. *Teaching and Teacher Education*, *26*(4), 933–940. [CrossRef]

Gorozidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and Teacher Education*, *39*, 1–11. [CrossRef]

Gorozidis, G., & Papaioannou, A. G. (2016). Teachers' achievement goals and self-determination to engage in work tasks promoting educational innovations. *Learning and Individual Differences*, *49*, 46–58. [CrossRef]

Hebles, M., Yaniz-Álvarez-de-Eulate, C., & Jara, M. (2019). Impact of cooperative learning on teamwork competence. *Academia Revista Latinoamericana de Administración*, *32*(1), 93–106. [CrossRef]

Hortigüela-Alcalá, D., Hernando-Garijo, A., González-Víllora, S., Pastor-Vicedo, J. C., & Baena-Extremera, A. (2020). "Cooperative learning does not work for me": Analysis of its implementation in future physical education teachers. *Frontiers in Psychology*, *11*, 1539. [CrossRef]

Hussain, M. S., Khan, S. A., & Bidar, M. C. (2022). Self-efficacy of teachers: A review of the literature. *Multi-Disciplinary Research Journal*, *10*(1), 110–116.

Jager, J., Putnick, D. L., & Bornstein, M. H. (2017). II. More than just convenient: The scientific merits of homogeneous convenience samples. *Monographs of the Society for Research in Child Development*, *82*(2), 13–30. [CrossRef]

Johnson, D. W., & Johnson, R. T. (1999). Making cooperative learning work. *Theory into Practice*, *38*(2), 67–73. [CrossRef]

Johnson, D. W., & Johnson, R. T. (2002). Cooperative learning and social interdependence theory. In R. S. Tindale, L. Heath, J. Edwards, E. J. Posavac, F. B. Bryant, Y. Suarez-Balcazar, E. Henderson-King, & J. Myers (Eds.), *Theory and research on small groups* (Vol. 4, pp. 9–35). Kluwer Academic Publishers. [CrossRef]

Jolliffe, W. (2015a). Bridging the gap: Teachers cooperating together to implement cooperative learning. *Education 3–13*, *43*(1), 70–82. [CrossRef]

Jolliffe, W. (2015b). Learning to learn together: Cooperation, theory and practice. *Education 3–13*, *43*(1), 1–4. [CrossRef]

Keramati, M. R., & Gillies, R. M. (2021). Perceptions of undergraduate students on the effect of cooperative learning on academic achievement. *Journal of Applied Research in Higher Education*, *14*(1), 440–452. [CrossRef]

Keramati, M. R., & Gillies, R. M. (2022). Advantages and challenges of cooperative learning in two different cultures. *Education Sciences*, *12*(1), 3. [CrossRef]

Klaeijsen, A., Vermeulen, M., & Martens, R. (2018). Teachers' innovative behaviour: The importance of basic psychological need satisfaction, intrinsic motivation, and occupational self-efficacy. *Scandinavian Journal of Educational Research*, *62*(5), 769–782. [CrossRef]

Koutselini, M. (2008). Teacher misconceptions and understanding of cooperative learning: An intervention study. *The Journal of Classroom Interaction*, *43*(2), 34–44.

Krečič, M. J., & Grmek, M. I. (2008). Cooperative learning and team culture in schools: Conditions for teachers' professional development. *Teaching and Teacher Education*, *24*(1), 59–68. [CrossRef]

Kyndt, E., Raes, E., Lismont, B., Timmers, F., Cascallar, E., & Dochy, F. (2013). A meta-analysis of the effects of face-to-face cooperative learning. *Do recent studies falsify or verify earlier findings?* Educational Research Review, *10*, 133–149. [CrossRef]

Larraz, N., Vázquez, S., & Liesa, M. (2017). Transversal skills development through cooperative learning. Training teachers for the future. *On the Horizon*, *25*(2), 85–95. [CrossRef]

Liebech-Lien, B. (2021). Teacher teams—A support or a barrier to practising cooperative learning? *Teaching and Teacher Education*, *106*, 103453. [CrossRef]

Mascret, N., Elliot, A. J., & Cury, F. (2015). The 3 × 2 achievement goal questionnaire for teachers. *Educational Psychology*, *37*(3), 346–361. [CrossRef]

McCullagh, P., & Nelder, J. A. (2019). *Generalized linear models* (2nd ed.). Routledge. [CrossRef]

Mendo-Lázaro, S., León-del-Barco, B., Polo-del-Río, M.-I., & López-Ramos, V. M. (2022). The impact of cooperative learning on university students' academic goals. *Frontiers in Psychology*, *12*, 787210. [CrossRef] [PubMed]

Menéndez-Espina, S., Prieto-Saborit, J. A., Mendez-Alonso, D., Jiménez-Arberas, E., Llosa, J. A., & Nistal-Hernández, P. (2025). The relationship between the motivational style of teachers and the implementation of cooperative learning: A self determination theory approach. *Sustainability*, *17*(8), 3673. [CrossRef]

Méndez-Giménez, A., Cecchini-Estrada, J.-A., Fernández-Río, J., Mendez-Alonso, D., & Prieto-Saborit, J. A. (2017). Metas de logro 3 × 2, motivación autodeterminada y satisfacción con la vida en educación secundaria. *Revista de Psicodidáctica*, *22*(2), 150–156. [CrossRef]

Méndez-Giménez, A., Cecchini-Estrada, J. A., Méndez-Alonso, D., Prieto-Saborit, J. A., & Fernández-Río, J. (2018). Efecto de las metas de logro y las estructuras de metas de clase 3 × 2 en la motivación autodeterminada: Un análisis multinivel en educación secundaria. *Anales de Psicología/Annals of Psychology*, *34*(1), 52–65. [CrossRef]

Méndez-Giménez, A., Fernández-Río, J., & Cecchini-Estrada, J.-A. (2012). Analysis of a multi-theoretical model of achievement goals, friendship goals and self-determination in physical education. *Studies in Psychology*, *33*(3), 325–336. [CrossRef]

Montero, I., & León, O. G. (2007). A guide for naming research studies in psychology. *International Journal of Clinical and Health Psychology*, *7*(3), 847–862.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Harvard University Press.

Odehova, N., Nevska, Y., & Perlova, V. 2022. *The effectiveness of cooperative learning in developing grammar skills*. Advanced Education. Available online: https://eric.ed.gov/?id=EJ1362783 (accessed on 13 October 2024).

Pons, R. M., Sharan, Y., Serrano, J. M., Lomeli, C., & Buchs, C. (2013). Training of non-university level teachers in cooperative learning methods. *Psychology*, *4*(3), 3. [CrossRef]

Prieto-Saborit, J. A., Fernández-Río, J., Cecchini Estrada, J. A., Méndez-Giménez, A., & Alonso, D. M. (2016). Teachers' attitude and perception towards cooperative learning implementation: Influence of continuing training. *Teaching and Teacher Education*, *59*, 438–445. [CrossRef]

Prieto-Saborit, J. A., Méndez-Alonso, D., Cecchini, J. A., Fernández-Viciana, A., & Bahamonde-Nava, J. R. (2021). Cooperative learning for a more sustainable education: Gender equity in the learning of maths. *Sustainability*, *13*(15), 8220. [CrossRef]

Prieto-Saborit, J. A., Méndez-Alonso, D., Fernández-Viciana, A., Dixit, L. J. D., & Nistal-Hernández, P. (2022a). Implementation of cooperative learning and its relationship with prior training of teachers, performance and equity in mathematics: A longitudinal study. *Sustainability*, *14*(23), 16243. [CrossRef]

Prieto-Saborit, J. A., Méndez-Alonso, D., Ordóñez-Fernández, F., & Bahamonde, J. (2022b). Validation of a cooperative learning measurement questionnaire from a teaching perspective. *Psicothema*, *1*(34), 160–167. [CrossRef] [PubMed]

Puiggali, J., Tesouro, M., & Felip, N. (2023). Análisis de las competencias genéricas en los Grados de Maestro: Un estudio desde la perspectiva del alumnado de la Universidad de Girona [Analysis of generic competencies in the Master's Degrees: A study from the perspective of students at the University of Girona]. *RELIEVE. Revista Electrónica de Investigación y Evaluación Educativa*, *29*(2), 1–22.

Raviv, A., Cohen, S., & Aflalo, E. (2019). How should students learn in the school science laboratory? The benefits of cooperative learning. *Research in Science Education*, *49*(2), 331–345. [CrossRef]

Rivera-Pérez, S., Fernandez-Rio, J., & Iglesias Gallego, D. (2021a). Effects of an 8-week cooperative learning intervention on physical education students' task and self-approach goals, and emotional intelligence. *International Journal of Environmental Research and Public Health*, *18*(1), 61. [CrossRef] [PubMed]

Rivera-Pérez, S., León del Barco, B., González Bernal, J. J., & Iglesias Gallego, D. (2021b). Cooperative learning and approach goals in physical education: The discriminant role of individual accountability. *Revista de Psicodidáctica*, *26*(1), 78–85. [CrossRef]

Segundo-Marcos, R., Merchán Carrillo, A., López Fernández, V., & Daza González, M. T. (2022). Development of executive functions in late childhood and the mediating role of cooperative learning: A longitudinal study. *Cognitive Development*, *63*, 101219. [CrossRef]

Segundo-Marcos, R., Merchán Carrillo, A., López Fernández, V., & Daza González, M. T. (2023). Age-related changes in creative thinking during late childhood: The contribution of cooperative learning. *Thinking Skills and Creativity*, *49*, 101331. [CrossRef]

Siew, N. M., Chin, M. K., Sombuling, A., & Sombuling, A. (2017). The effects of problem based learning with cooperative learning on preschoolers' scientific creativity. *Journal of Baltic Science Education*, *16*(1), 100–112. [CrossRef]

Slavin, R. E. (1983). When does cooperative learning increase student achievement? *Psychological Bulletin*, *94*(3), 429–445. [CrossRef]

Slavin, R. E. (2008). Cooperative Learning, Success for All, and Evidence-based Reform in education. *Éducation et Didactique*, *2*, 2. [CrossRef]

Slavin, R. E., Sheard, M. K., Hanley, P., Elliott, L., Chambers, B., & Cheung, A. (2013). *Effects of co-operative learning and embedded multimedia on mathematics learning in key stage 2: Final report*. Institute for Effective Education.

Suryadi, D., Okilanda, A., Nofrizal, D., Suganda, M. A., Tulyakul, S., Ahmed, M., Hussain, I., Nasrulloh, A., Samodra, Y. T. J., Wati, I. D. P., & Bastian, R. H. (2024). How does cooperative learning work with students?: Literature review in physical education. *Retos: Nuevas Tendencias En Educación Física, Deporte y Recreación*, *55*, 527–535. [CrossRef]

Syamsi, B. (2024). Bibliometric analysis of cooperative learning (1974–2023). *Journal of Research in Education and Pedagogy*, *1*(1), 11–23. [CrossRef]

Thanh, P. T. H. (2011). An investigation of perceptions of vietnamese teachers and students toward cooperative learning (CL). *International Education Studies*, *4*(1), 3–12. [CrossRef]

Thoonen, E. E. J., Sleegers, P. J. C., Oort, F. J., Peetsma, T. T. D., & Geijsel, F. P. (2011). How to improve teaching practices: The role of teacher motivation, organizational factors, and leadership practices. *Educational Administration Quarterly*, *47*(3), 496–536. [CrossRef]

Van Ryzin, M. J., Cil, G., & Roseth, C. J. (2023). Costs and benefits of cooperative learning as a universal school-based approach to adolescent substance use prevention. *Journal of Community Psychology*, *51*(1), 438–452. [CrossRef]

Yang, X. (2023). A historical review of collaborative learning and cooperative learning. *TechTrends*, *67*(4), 718–728. [CrossRef]

Yuliani, H., Normilawati, N., Andani, T., & Aulia, M. (2021). Advantages and disadvantages of applying the NHT type cooperative learning model physics learning in school. *Jurnal Ilmiah Pendidikan Fisika*, *5*(1), 55. [CrossRef]

Zou, H., Yao, J., Zhang, Y., & Huang, X. (2024). The influence of teachers' intrinsic motivation on students' intrinsic motivation: The mediating role of teachers' motivating style and teacher-student relationships. *Psychology in the Schools*, *61*(1), 272–286. [CrossRef]