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ORIGINAL

COOPERATIVE LEARNING, BASIC PSYCHOLOGICAL NEEDS AND INTENTION TO BE PHYSICALLY ACTIVE

APRENDIZAJE COOPERATIVO, NECESIDADES PSICOLÓGICAS BÁSICAS E INTENCIONALIDAD DE MANTENERSE FÍSICAMENTE ACTIVO

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ABSTRACT

The goal of this study was to assess the effects of a long-term Cooperative Learning programme in students' basic psychological needs and their intention to be physically active. A total of 109 students (12-14 years old) enrolled in four different Year 8 classes of Secondary Education agreed to participate. Students were organised into an experimental group (n=56), who experienced a Cooperative Learning intervention programme in Physical Education for five months (five learning units, 40 sessions) and a control group (n=53) who experimented, during the same period, the same learning units under a Direct Instruction approach. A quasi-experimental repeated measure applying a pre-test, post-test comparison group design was followed. The results evidenced statistically significant improvements in the intention to be physically active and the basic psychological needs for autonomy and relatedness only in the group of students who experienced Cooperative Learning.

KEY WORDS: Cooperative Learning. Direct Instruction. Physical Education. Basic Psychological Needs.

RESUMEN

El objetivo de este estudio fue evaluar los efectos de un programa de larga duración de Aprendizaje Cooperativo en las necesidades psicológicas básicas de los estudiantes y su intención de ser físicamente activos. Un total de 109 estudiantes (12-14 años) de cuatro clases diferentes de primer curso de Educación Secundaria Obligatoria aceptaron participar. Los estudiantes fueron organizados en un grupo experimental (n=56), que desarrolló un programa de intervención de Aprendizaje Cooperativo en Educación Física durante cinco meses (cinco unidades didácticas, 40 sesiones), y un grupo de control (n=53) que experimentó, durante el mismo periodo, las mismas unidades didácticas bajo un enfoque de Instrucción Directa. Se siguió un diseño cuasi-experimental de medidas repetidas, empleando una comparación de grupos pretest-postest. Los resultados evidenciaron mejoras estadísticamente significativas en la intención de ser físicamente activo y las necesidades psicológicas básicas de autonomía y relación solo en el grupo de alumnos que experimentaron el Aprendizaje Cooperativo.

PALABRAS CLAVE: Aprendizaje Cooperativo. Instrucción Directa. Educación Física. Necesidades Psicológicas Básicas.

1. INTRODUCTION

Cooperative Learning could be defined as students working in small, heterogeneous groups (i.e., gender, ethnicity, skill, social background), where they have to work together to achieve common goals (Fernandez-Río et al., 2017a; Johnson et al., 2013). There seems to be consensus on the five dimensions or fundamental elements that any Cooperative Learning structure should include (Casey & Goodyear, 2015; Johnson et al., 2013): 1) Positive interdependence: group members depend on each other to achieve the learning goals; 2) Promotive interaction: students must be in direct contact with each other while performing the tasks; 3) Individual accountability: each student must finish his/her part of the group's task; 4) Group processing: the group must discuss and debate about their own functioning; and 5) Interpersonal skills: group members learn communication, team management and leadership skills. Scientific literature claims that Cooperative Learning can be an appropriate methodological tool to achieve educational objectives of a different nature (i.e., motivation, persistence, self-confidence, social relationships), standing out above more competitive or individualistic instructional approaches (Johnson & Johnson, 2014). Johnson et al. (2013), considered that there are so many contributions that Cooperative Learning can make in order to help Education meet the needs of today's individuals that they named it the methodological tool of the 21st century. Some authors believed that cooperative activities should represent between 60% and 70% of the class time, individual activities around

20% and competition between 10 and 20% to have a balanced educational programme (Johnson & Johnson, 2014).

Over the last three decades, Physical Education and Cooperative Learning have become great partners to promote students' learning and, in everything related to them (Fernández-Río & Méndez-Giménez, 2016), in all the four domains: physical, cognitive, social and affective (Casey & Goodyear, 2015; Kirk, 2013; Metzler, 2011). Regarding the physical and cognitive domains, students who experienced this pedagogical approach increased their game understanding and skills (Casey, 2014). Concerning social learning, improvements have been found in leadership skills (Dyson, 2001), communication skills (Dyson, 2002) and supporting others (Casey et al., 2009). Finally, regarding the affective domain, Cooperative Learning has been found to promote students' self-confidence, self-esteem and motivation (Fernández-Río et al., 2017b; Goodyear et al., 2014). With regard to these four domains, Cooperative Learning has been used successfully for the development of various contents of the Physical Education subject (Dyson, 2001), although in contents such as sports, it has been more complex (Barrett, 2005). That is why the mixture or hybridisation with other educational models has been seen as an alternative (Fernández-Río & Méndez-Giménez, 2016). Among others, the hybridisation of Cooperative Learning with Comprehensive Teaching has allowed improvements in social, physical, and cognitive development, as well as the promotion of "active learning that includes decision-making processes, social interaction and cognitive understanding" (Fernández-Río & Méndez-Giménez, 2016, p. 203).

Many of the studies cited above have been conducted during short or limited periods of time. There is consensus on the need to go further than the "initial honeymoon period" or "beyond the initial unit of instruction" (Casey & Goodyear, 2015, p. 68), because substantial changes take time. Taking as reference certain reviews (Bores-García et al., 2021; Casey & Goodyear, 2015) on the Cooperative Learning pedagogical model, the following studies have tried to address the long-term effects of a Cooperative Learning intervention programme: Polvi and Telama (2000) conducted an annual programme increasing the students' helping behaviours, from Year 5 of Compulsory Primary Education, showing the results a significant improvement of prosocial behaviours with respect to the control group; Dyson (2002) found that the participants (teacher and students) in Year 3 and 4 of Compulsory Primary Education developed similar positive perceptions for the achievement of psychomotor, social and affective objectives of the pedagogical approach used; Altinkok (2017) evaluated the impact of the students' basic motor skills in Year 1 of Compulsory Primary Education, observing an improvement in these after a 12-week intervention; Fernández-Río et al. (2017b) conducted three consecutive learning units, using various cooperative strategies, to find an increase the motivation of students, aged between 12 and 14 years old, towards Physical Education; and finally, Cecchini et al. (2018) measured the impact of Cooperative Learning on the relationships of students (aged between 12 to 17 years old), intrinsic motivation and future intentions to practise sports during six months, finding positive changes in the experimental group in all variables analysed. There seems to be a need to conduct more sustained studies to

assess if the positive findings described in shorter studies can also be obtained in longer interventions. In the same trend, more studies are required using different Cooperative Learning strategies beyond the learning teams, involving psychological components of the affective domain of students, such as motivation, and using qualitative and quantitative methods and standardised measures (Casey & Goodyear, 2015; Kirk, 2013).

On the other hand, a wide theoretical framework that has been extensively used to study motivation in physical activity contexts is the Self-Determination Theory (Deci & Ryan, 2000). Basically, it emphasises the importance of the environment and its social factors in human behaviour, considering that individuals' motivation can be influenced by the fulfilment of three basic psychological needs: competence, autonomy and relatedness. Competence is the perception that an individual has to show his/her effectiveness in the development of his/her own abilities. Autonomy has been defined as the feeling of being the source of one's behaviour. Finally, relatedness refers to the feeling of connection with others, the feeling of belonging to a social environment. Within Physical Education, several studies have showed that the satisfaction of these three psychological needs is associated with benefits such as greater intrinsic motivation (Vallerand, 1997), concentration, affection and well-being (Standage et al., 2005). Research has showed that Cooperative Learning can increase Secondary Education students' intrinsic motivation (Fernández-Río et al., 2017b) but, to our knowledge, only two studies have been found (Hänze & Berger, 2007; Sepehrian Azar, 2016) that relate the use of the puzzle technique, or "Jigsaw" by Aronson et al. (1978), with the positive effects on the students' basic psychological needs, as well as another that analyses the incidence of Cooperative Learning through cooperative challenges on competence, autonomy and relatedness (Palau-Pamies et al., in press). However, considering that only two of them have used Physical Education content, there seems to be a need to consider this gap in the research to understand human behaviour after experiencing Cooperative Learning in this subject, as reflected Cecchini et al. (2018) in relation to the search for the impact of this model on competence or autonomy, among other variables.

In line with the previous paragraph, authors such as Deci et al. (1991) observed that self-determined motivation was linked to a series of positive results, such as academic performance, personal adjustment and continuity in studies. The authors state that when people are intrinsically motivated to do physical activity, they will remain physically active throughout their lives, an aspect that is corroborated by another research (Lim & Wang, 2009; Sproule et al., 2007). At least, a part of society is increasingly aware of the importance of physical exercise as a means of improving people's health and quality of life.

Unfortunately, according to the World Health Organization (2018), at least 60% of the world's population can be considered sedentary, also observing that 80% of young people do not do enough physical activity. Different scholars affirm that Physical Education can provide an ideal context to improve the quality of life of children and adolescents (Standage & Gillison, 2007). Furthermore, Secondary Education has been considered the critical phase to consolidate the practice of physical activity, a fundamental element to acquire a healthy lifestyle, as well as a productive psychological well-being (Jiménez et al., 2008).

Within the wide concept of motivation, as a decisive factor that influences an individual's intention to be physically active, intrinsic motivation has been considered a relevant factor for individuals to remain physically active (Hein et al., 2004). This has close connections with Cooperative Learning environments (Fernández-Río et al., 2017b) and improves by satisfying the three basic psychological needs (Deci & Ryan, 2000; Ryan & Deci, 2000). As far as it is known, only two investigations have been found that analyse the possible effects of Cooperative Learning on students' intention to stay physically active (Cecchini et al., 2018; Ntoumanis, 2001). There seems to be a need to fill in this gap, and find out if Physical Education, with the help of pedagogical models such as Cooperative Learning, can represent more than simple "healthism" (Kirk & Colquhoun, 1989).

Based on all the above, the main objective of this study was to investigate the effects of a long-term Cooperative Learning intervention programme, in comparison with a Direct Instruction approach, on the Cooperation Factor in Secondary Education students, and check if Cooperative Learning is correctly implemented. A second objective was to assess the effects of this program, in comparison with the previous one, on the basic psychological needs of competence, autonomy and relatedness of the students and their intention to be physically active.

2. METHOD

2.1. Participants

A total of 109 students (54.21% boys and 45.79% girls) enrolled in four different Year 8 Secondary Education classes and aged between 12-14 years old (with an average age of 12.21), from two different schools in the city of Albacete, in the southeast of Spain, agreed to participate. Both schools had similar medium-level socio-economic and cultural characteristics. Natural groups formed by the school management team of each school were used, applying probabilistic convenience sampling. Therefore, four class groups participated in this study in real educational contexts. Of the students' total number, 56 of them (two classes) were included in the experimental group (58.93% boys and 41.07 girls), who developed a Cooperative Learning programme, while 53 students (two classes) were part of the control group (49.06 boys and 50.94 girls) that experienced a Direct Instruction approach. None of the groups had previously experienced Cooperative Learning. The objective was to carry out the study in real contexts.

2.2. Instruments

The Cooperative Learning Questionnaire (CAC; Fernández-Río et al., 2017a). It consists of 20 items equally distributed in each of the five dimensions of Cooperative Learning: *Interpersonal Skills* (i.e., "We work on discussing, debating and listening to others"), *Group Processing* (i.e., "We talk to each other to make sure that everyone in the group knows what is being done"), *Positive Interdependence* (i.e., "My groupmates' help is very important to complete the

tasks”), *Promotive Interaction* (i.e., “Groupmates relate with each other and interact during the tasks”), and *Individual Accountability* (i.e., “Every group member has to participate in the group’s tasks”). The instrument also allows researchers to obtain a Global Cooperation Factor (adding all the items and dividing the score by 20), which was used in the present study. It has been found helpful to mark cooperation among groups from the students’ point of view (Fernandez-Rio et al., 2017a). Cronbach’s alpha obtained was very high = .92, which provides evidence of the measure’s reliability and validity.

The basic psychological needs in Physical Education Scale (Menéndez-Santurio & Fernández-Río, 2018). The Spanish validated version of the original instrument (Vlachopoulos et al., 2011) was used. It includes 12 items grouped in three dimensions: *Competence* (four items; i.e., “I feel that I improve even in the tasks considered difficult by most of the children”), *Autonomy* (four items; i.e., “I feel that the way PE is taught is the way I would like to”) and *Relatedness* (four items; i.e., “I feel like I have a close bond with my classmates”). In the present study, all Cronbach’s alphas were high: Competence = .86, Autonomy = .84 and Relatedness = .83.

Intention to be physically active measure (MIFA; Moreno et al., 2007). The Spanish validated version of the original instrument (Hein et al., 2004) was used. It is composed of five items (i.e., “After finishing high school, I would like to be physically active”). In the present study, Cronbach’s alpha was also high = .86.

In the first and third instruments, the response format was a five-point Likert-type scale, where 1 corresponded to “Totally disagree” and five to “Totally agree”. The second instrument used a seven-point Likert-type scale where 1 referred to “Totally disagree”, 4 to “Moderately agree” and 7 to “Totally agree”. All the questionnaires have been validated for Secondary Education students.

2.3. Procedure

The study followed a pre-test, post-test, quasi-experimental, comparison group design. Therefore, data was collected at two time points: at the beginning of the intervention programme (pre-test) and at the end of it, five months later (post-test). First, permission was obtained from the researchers’ university Ethics Committee. Next, collaboration was requested from both schools’ management teams. Finally, informed consent was requested from all students’ parents. All the students, both from the experimental group and the control group, were encouraged to answer as truthfully as possible, ensuring that their answers would not affect their marks. All the instruments were provided in a single complete session of the Physical Education subject, both in the pre-test and in the post-test phase. A member of the research team, without knowing to which study group of students they belonged, supervised the entire process.

The implementation of the practical part of the study was carried out through didactic units, which are justified within the Physical Education teaching plan that the teachers of the experimental and control group prepared to develop the

subject in the two educational schools. This didactic programme included four of the five content blocks found in Decree 40/2015, of 06/15/2015, which establishes the Secondary Education and Baccalaureate curriculum in the Autonomous Community of Castilla-La Mancha (in ahead, Decree 40/2015). These content blocks are as follows: Block 1: Physical condition and health; Block 2: Games and sports; Block 4: Body and artistic expression; and Block 5: Attitudes, values, and norms. Block 3: Physical-sports activities in the natural environment were scheduled to take place in the last month of the academic year. Therefore, it was not included in this study.

Hastie and Casey (2014, p. 423) highlighted that, to establish the fidelity of a model's implementation, it is necessary: "a) a rich description of the curricular elements of the unit, b) a detailed validation of model implementation, and c) a detailed description of the programme context". All of them have been completed in this project.

Regarding the context of the programme, both study groups experienced the same intervention programmes in terms of duration: five months (40 sessions; two sessions/week). However, a Physical Education teacher conducted all the classes in the experimental group and a different Physical Education teacher conducted all the classes in the control group. Both had more than 10 years of teaching experience. The one who conducted the intervention programme in the control group had always used a Direct Instruction approach, while the one in the experimental group was an expert on Pedagogical Models (he had completed a Master's Degree on this topic). Nevertheless, each teacher agreed to attend a 20-hour seminar (5 hours of theory and 15 hours of practice) on the instructional approach that they were going to use. It was conducted by the research team (their members had more than 10 years of research on pedagogical models), and it included the review of tasks and pre-designed sessions to develop the final version of each learning unit, which was supervised by the research team. The goal was to provide an adequate training and support prior to and during the implementation phases of the project. The whole process was based on Goodyear's (2017) continuous professional development.

As for the curricular elements of each unit, they will be described below.

Cooperative Learning. In the experimental group, five learning units were implemented using several Cooperative Learning techniques (Fernández-Río, 2016), observing a brief description of the intervention programme in Table 1.

Table 1. Cooperative Learning units.

Units	Sessions	Strategies	Curriculum content
We know each other	7 Phase 1: Cooperative presentation dynamics	Icebreakers	Practice of games and activities for the development of body awareness and disinhibition in the activities of expression.
Body expression	7 Phase 2: Cooperative Learning as a content to be taught	Collective score	Discovery and experimentation of expressive and communicative possibilities of body and movement and concepts of space, time, and intensity.
Cooperative physical challenges-Conditioning	6 Phase 3: Cooperative Learning as a resource for teaching	Think-Share-Perform	General physical conditioning of the basic physical abilities through basic development methods, games, and other physical-sports activities.
Sport I. Invasion games	10	Learning teams	Familiarisation with the basic aspects of technique, tactics, and the regulations of at least one cooperation-opposition sport.
Sport II. Netball /Wall Games	10	Pairs-Check-Perform	Familiarisation with the basic aspects of the technique and the regulations of at least one individual sport.

All learning units included the previously described five basic elements of Cooperative Learning (Johnson et al., 2013). Several examples are included in Table 2.

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Table 2. Key Cooperative Learning elements on each learning unit.

	Unit 1. We know each other	Unit 2. Body expression	Unit 3. Cooperative physical challenges-Conditioning	Unit 4. Sport I. Invasion games	Unit 5. Sport II. Netball/Wall Games
Face-to-face promotive interaction	Students began to know each other	Students helped each other	Students worked in groups	Students practised basketball skills in groups	Students practised racket skills in groups
Positive interdependence	Students waited for all group members to finish each task	A task was not completed until all members finished it	A challenge was not finished until all members completed it	Students moved on to the next task when all group members had finished it	Students advanced to the next assignment when all members had completed it
Individual accountability	Students learned cooperative roles	Students integrated their cooperative roles	Captain's role rotated among all group members	All students fulfilled the role of evaluator (co-assessment)	All students performed the roles of teacher and evaluator
Interpersonal and small-group skills	Students shared resources	Students shared space	Students encouraged each other	Students helped each other	Students cheered each other
Group processing	Students presented ideas	Students brainstormed about concepts	Students discussed to find solutions	Students dealt with the group's work	Students talked about their behaviours

Direct Instruction. In the control group, the same five learning units (except that number three included only fitness and no cooperative physical challenges), were implemented, but the teacher used a Direct Instruction approach (Metzler, 2011). Task selection, organisation, structure, and presentation were controlled by the teacher. Students' interaction, work pace and evaluation were also teacher-centred. Working groups were selected by the teacher and changed frequently. Each session's format followed a three-phase framework: (a) Warm-up: students performed games to activate their bodies and minds (i.e., tag games), (b) Main part: students performed tasks to improve their skills (i.e., basketball dribbling drills, pickleball hitting drills, games...), and (c) Cool down: students performed light tasks to get ready for the next class (i.e., stretch). To avoid a possible bias in the study, participating teachers (with the help of the research team) developed engaging lesson plans (fun and enjoyable) for the students, but also of high-quality ones: activities were designed to increase students' academic participation and active practice time (Metzler, 2011).

In order to validate each instructional approach, all sessions were recorded on video. Ten were randomly selected and sent to two independent researchers, experts on instructional designs, to verify both intervention programmes. A checklist with benchmarks (Table 3), adapted from Metzler (2011), was

designed to assess the basic elements of each instructional approach, with a scoring system using a scale of one-to-five points. Both observers scored 30 points on each instructional approach (100% fidelity) and reached 100% inter-observer agreement.

Table 3. Checklist used to assess each pedagogical approach.

Ítem	Benchmark
1. _____	Teacher makes heterogeneous teams
2. _____	Tasks require a contribution by all team members
3. _____	Teacher uses Cooperative Learning strategies
4. _____	Students' groups change from one session to the other
5. _____	Tasks are conducted mainly by the teacher
6. _____	Teacher uses massive instruction techniques

Note: items 1, 2, 3 represent Cooperative Learning; items 4, 5, 6 represent Direct Instruction.

2.4. Data analyses

All data were assessed using the Statistical Package for the Social Sciences (SPSS, 22.0 versions). The data analyses were carried out at two times: pre-test and post-test phases of the two groups under study: experimental and control groups. Analyses conducted were exploratory, descriptive, and inferential. First, a multivariate analysis of variance (MANOVA), selecting Levene's test ($p > .05$), was used to assess initial homogeneity between the two study groups at pre-test. Second, a repeated measure MANOVA was conducted to assess pre-test, post-test differences. Finally, the effect size was also obtained (small $< .01$; medium $.06$; large $\geq .14$) (Richardson, 2011).

3. RESULTS

The pre-test MANOVA showed no statistically significant differences between the experimental and control groups in any of the variables under study. Therefore, both study groups could be considered homogeneous prior to the intervention programme.

To assess the effects of the intervention programme on each group, a 2 x 2 (group x time) repeated measure MANOVA was conducted. The interaction effect showed that the intervention had a significant main effect: $F(8) = 3,867$, $p = .001$, $\eta^2 = .238$. The subsequent ANOVAS showed statistically significant difference in favour of the experimental group in all the variables assessed except from Competence: Global Cooperation Factor: $p = .027$; $\eta^2 = .045$, Autonomy: $p = .014$; $\eta^2 = .056$, Relatedness: $p = .001$; $\eta^2 = .104$, and Intention to Be Physically Active: $p = .012$; $\eta^2 = .058$. In all cases, the effect size can be considered medium. All results are shown in Table 4.

Table 4. Repeated measures MANOVA of all the variables under study.

	Experimental						Control				
	Pre-test		Post-test		p	η^2	Pre-test		Post-test		p
	M	SD	M	SD			M	SD	M	SD	
Global Cooperation Factor	4.19	.26	4.36	.48	.025*	.045	4.14	.45	4.13	.43	>.05
Intention to be physically active	20.80	2.71	21.68	2.67	.007*	.058	21.94	3.05	21.57	3.57	>.05
Competence	19.55	3.87	20.63	4.38	>.05	.006	20.58	4.74	21.08	4.36	>.05
Autonomy	18.30	4.07	20.18	3.97	.014*	.056	19.79	4.73	19.63	4.89	>.05
Relatedness	19.32	4.32	20.88	4.20	.001*	.104	20.98	5.09	19.60	4.69	>.05

Note: M = Mean; SD: Standard deviation; η^2 = partial-eta squared; $p < .05$.

4. DISCUSSION

The main objective of this study was to investigate the effects of a long-term Cooperative Learning intervention programme, compared to a Direct Instruction approach, on the Cooperation Factor in Compulsory Secondary Education students and to verify if Cooperative Learning is implemented correctly. A second objective was to evaluate the consequences of this programme, in comparison with the previous one, on the basic psychological needs of competence, autonomy and relatedness of the students, and their intention to be physically active. Results showed that the students who experienced the Cooperative Learning programme significantly improved their Cooperation Factor, that is why it was implemented correctly, their basic psychological needs for autonomy and relatedness, and their intention to be physically active.

As expected, only students who experienced Cooperative Learning significantly improved their cooperation (measured through the Global Cooperation Factor). This result reinforces the design of the intervention programme based on Cooperative Learning, clearly indicating that it was successful (as indicated by the external observers, too). Therefore, it is possible to design long-term intervention programmes (five months) with a high number of consecutive sessions (40) based on this pedagogical model to work on different contents (body expression, physical condition, sports), and increasing the cooperation among students. Previous research has showed that it is extremely important to train teachers to successfully integrate Cooperative Learning on their Physical Education classes, helping them go beyond the "initial honeymoon period" or "beyond the initial unit of instruction" (Casey & Goodyear, 2015, p. 68), because substantial pedagogical changes take time and require specific training (Goodyear, 2017). Results of the present study clearly reflected the difference between the programmes applied in both study groups (Cooperative Learning and Direct Instruction), showing that the fidelity of the model was correct, as well as the results that can be attributed to it. Unfortunately, there are no previous studies that have used this Global Cooperation Factor to compare results, but those obtained in this study indicated that this factor can help teachers and researchers evaluate their Cooperative Learning programmes from the students' point of view (benchmarks and checklists are used by

external observers). Therefore, you can contribute to the international literature on the fidelity implementation of the Cooperative Learning model.

Related to the second objective of this study, the results showed that two of the three basic psychological needs, autonomy and relatedness, increased significantly only in the group that experienced Cooperative Learning. As far as we know, only two studies have been found, one of them in press, that analyse the connection between Cooperative Learning and basic psychological needs. The first of them, cross-sectional, showed that under Cooperative Learning environments, students developed greater feelings of competence than in direct instruction environments (Hänze & Berger, 2007). In the present investigation there were no significant differences between both approaches. Regarding the second study found, the authors point out the existence of positive results in the three basic psychological needs (Palau-Pamies et al., in press). In the present study, improvements were found in only two of the three needs. Perhaps the short duration of the Palau-Pamies et al. (in press) study, only six sessions, has enabled better results than the present investigation which included 40 sessions divided into five learning units. As anticipated by Deci and Ryan (2000), a classroom atmosphere can influence students' motivation through the satisfaction of their basic psychological needs of competence, autonomy and relatedness. Fernández-Río et al. (2017b) found that a Cooperative Learning intervention programme, when properly conducted, can promote students' intrinsic motivation, which, as this study seemed to indicate, can also foster students' autonomy. Individual accountability is one of the basic elements of this pedagogical approach, which can influence students' autonomous behaviours. This pedagogical model probably helped promote the development of an inclusive classroom environment, where opportunities of choice and decision-making were given to all students, and, as a result, it influenced students' autonomy positively. In any case, this statement cannot be confirmed directly by the obtained results, and more research is needed to validate these ideas. Using other pedagogical models (i.e Sports Education and Comprehensive Teaching) which share some characteristics with Cooperative Learning, such as working in groups and organising students in different roles (García-López & Gutiérrez, 2017), refers that supporting the autonomy can facilitate the transfer of motivation and participation in physical activity, from the Physical Education subject itself to an extracurricular context (Wallhead et al., 2010). In the study by MacPhail et al. (2008), the perceptions of autonomy increased thanks to the assessment of the students who found in Sports Education a fun and entertaining model, also developing a sense of affiliation, and belonging to the group. However, in other investigations, such as that of Perlman (2010), no differences were found between autonomy and competence, despite perceiving significantly higher levels of enjoyment and relationship satisfaction in students who experienced Sports Education in comparison with a traditional approach. On the other hand, in other studies that have used the Comprehensive Teaching model, such as Evans and Light (2008), and Mandigo et al. (2008), a greater perception of motivation was observed in students in training environments and in the Compulsory Primary Education stage, respectively, when the basic psychological need for autonomy is supported.

Nevertheless, Cooperative Learning programme also significantly increased the relationship of participating students. A cooperative atmosphere such as the one generated in this study, where students worked closely in small, heterogeneous groups, probably had a positive influence on their relationships. The basic characteristics of this pedagogical model, such as positive interdependence and promoting interaction, could have helped to promote the relationship of the students. Previous studies have shown that Cooperative Learning can achieve improvements in the behaviour and social cohesion of students (Gröben, 2005) more empathetic relationships to improve communication and mutual support (Palau-Pamies et al., in press), and an increase in prosocial behaviours (Street et al., 2004) with the resulting positive effects on the relationships between them. The findings of the current study and some previous ones (Fernández-Río et al., 2017b) are in line with the hierarchical motivation model of Vallerand (1997), in which the social factor, in this case, Cooperative Learning, can influence in the psychological mediators of the individuals (autonomy and relatedness), which, in turn, can influence their motivation and which lead to positive results in the variable of intention to be physically active.

Continuing with the second objective of the study, the results confirmed that students who experienced the Cooperative Learning intervention programme significantly increased their intention to be physically active. Only two investigations have been found that have analysed the possible effects of Cooperative Learning on the intention of students to remain physically active (Cecchini et al., 2018; Ntoumanis, 2001), and in both cases the results are in line with what was found in the present study: Cooperative Learning elicits positive consequences, in this case the intention to practise (continue developing) physical activity in the future. As pointed out in the previous paragraph, these results strengthen the idea of the hierarchical model of motivation (Vallerand, 1997). These results should be considered noteworthy, positive and encouraging, taking into account the current low levels of physical activity among youngsters (World Health Organization, 2018). Previous studies did find connections between other pedagogical models and students' intention to practice physical activity. Wallhead et al., (2013, p. 437) found that: "the social environment of Sport Education generated sufficient validation to positively contribute to the participants' sense of physical self, such that they chose to participate in similar physical activities outside of lesson time". Again Wallhead et al. (2010) measured students' voluntary participation in a sports club during lunchtime at break time. Students who had the opportunity to participate in sports clubs, whose activities coincided with the units taught during the Sports Education in Physical Education seasons, chose to regularly attend sports sessions during recess. Therefore, this finding provides evidence that suggests that the positive experiences of this pedagogical model could be transferred to the motivation of students to participate in extracurricular sports activities within school (Wallhead et al., 2010). Finally, Gil-Arias et al. (2017) found that hybridisation between two pedagogical models (Sports Education and Comprehensive Teaching) promoted the intentions of practising physical activity by Secondary Education students. As discussed in the previous paragraph, Cooperative Learning, which shares some features with these pedagogical models like situated learning and student-centred contexts (Dyson

et al., 2004), seemed to also help foster the intention of students' physical activity practice in their free time. The fact that the students had to work together in small heterogeneous groups, assume individual and group responsibilities, and reach consensus, together with the increase in one of the basic psychological needs, autonomy, could have prompted their decision-making skills, encouraging this group of students to increase their intentions to be physically active outside the school environment. Of course, this is highly speculative at this time and more studies are needed. Nevertheless, this finding also contributes to a view of Physical Education richer than simple "healthism" (Kirk & Colquhoun, 1989), which can make a positive impact on the students' lives beyond the school's walls.

5. CONCLUSIONS

A prolonged exposure to Cooperative Learning in the Physical Education class resulted in the significant improvement of two of the three basic psychological needs of Secondary Education students, autonomy and relatedness, and their intention to be physically active. This could be considered noteworthy, because physical activity practice is low among adolescents, and there is a need to find pedagogical approaches that can turn around this tendency. Findings from the present study could help teachers choose pedagogical approaches that can be positive for their students' in-class and off-class behaviours. These pedagogical approaches can help students develop positive social networks and autonomous behaviours that can lead them to an active and healthy life.

The limitations of this quasi-experimental investigation are mainly determined by the size of the sample; aspect that does not to generalise its results to the rest of the population as it is considered less powerful in external validity. Likewise, obtaining the sample from two different educational schools could be considered another limitation of this type of study, whose sole objective was to have greater ecological validity. Finally, the absence of research to compare results in some of the variables under study could be considered both a limitation and a strength, highlighting the originality of the present study.

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