Effectiveness of an Intervention Programme Based on Social Climate, School Violence and Sociometric Tests in Primary Education

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Abstract

This research aims to evaluate the effectiveness of the third module —Learning to Help and Cooperate— of the Programme for Developing Competent Social Relationships in Primary Education (Trianes, 2012) on a set of self-report variables (class social climate, school social climate, observed school violence and perceived school violence) and other variables with a sociometric format (physical aggressiveness, help and like). The study involved 78 participants (44 schoolboys and 34 schoolgirls) from 3rd and 4th grade at a public school in Malaga (Spain). In order to evaluate the effectiveness of the intervention, a pre-test/post-test control group design has been conducted together with covariance statistical analyses. Results showed that the intervention had a positive effect on the class social climate variables as well as on variables with a sociometric format.

Keywords: Self-report, social climate, school violence, sociometric, analysis of covariance.

Resumen

El objetivo del presente trabajo es evaluar la eficacia del tercer módulo Aprender a ayudar y a cooperar del Programa para el desarrollo de relaciones sociales competentes en educación primaria (EP) (Trianes, 2012), sobre un conjunto de variables de autoinforme (clima social del aula y del centro, y violencia escolar percibida y observada), así como otras variables con formato sociométrico (agresividad física, ayuda y gusta). Han participado en el estudio 78 alumnos/as (44 niños y 34 niñas) de tercero y cuarto de educación primaria de un centro público de la provincia de Málaga. Para evaluar la eficacia de la intervención, se ha llevado a cabo un diseño pretest-postest con grupo control y los análisis estadísticos realizados han sido análisis de la covarianza. Los resultados muestran que la intervención produjo efectos positivos en la variable clima social del aula y en las variables de formato sociométrico.

Palabras clave: Autoinforme, clima social, violencia escolar, sociométrico, análisis de la covarianza.

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Introduction

A Psycho-educational Intervention (hereinafter PI) is a set of articulated and coherent actions that are conducted by psychologists in co-operation with teachers, thus establishing a close relationship between school curriculum and improvement of inclusive schooling (Martín & Solé, 2011). It involves a systematic action plan throughout the school year, whose objectives can both match educators' objectives or/and support them. The plan should complement teachers' teaching practice and provide students with the necessary prerequisite skills to access democratic values and attitudes (Trianes, Luque, & Fernández-Baena, 2013). According to Lago and Onrubia (2011), a PI consists of five stages, namely: (1) analysis of the demand and negotiation of responsibilities between the counselor and participants; (2) comparative analysis between the teaching practice and the theoretical framework; (3) design of proposals for improvement and educational innovation; (4) cooperation with regards to the implementation, monitoring and enhancement setting; and (5) evaluation of the intervention and reformulation of the guidance plan. The ethical requirements needed to carry out a PI are: confidentiality, voluntary nature and consent by families (of involved students), teachers and School Council (Trianes, 2013).

A PI usually takes the form of comprehensive programmes focused on meeting the needs of a group of students who aim to develop specific skills within personal-social, vocational and/or academic areas, by means of a planned curriculum designed by the school staff (Trianes, 2013). The evaluation of educational programmes is considered as a useful tool for quality education and is designed to decide about the effectiveness of the programmes (Santrock, 2011) through a systematic research on processes, effects, results and objectives (Herrera & Olmos, 2009).

A review of PI programmes carried out in recent years shows that most of them promote interpersonal relationships among students in schools. They aim at developing social and/or study skills (Arco & Fernández, 2011; Bausela-Herreras, 2005; Garaigordobil & Martínez-Valderrey, 2014). PI programmes are primarily aimed at teenage or university students or students at risk (Arco & Fernández, 2011; Axpe & Uralde, 2008; Coelho, Sousa, & Figueira, 2014; Garaigordobil & Martínez-Valderrey, 2014). They are conducted during group tutoring hours in Secondary Education or outside school (Garaigordobil & Martínez-Valderrey, 2014; Lucas-Mangas & Carbonero-Martín, 2006) and performed by the school counselor or by an expert (Axpe, Acosta, & Moreno, 2011; Bausela-Herreras, 2005; Coelho, Sousa, & Figueira, 2014; González-Valenzuela, Martin-Ruiz, & Delgado-Ríos, 2012). As can be observed, the

PI performed in the present study shows innovative aspects, such as being conducted on students of Primary Education (hereinafter PE), being performed by the teacher herself within the curriculum of a given subject and encouraging prosocial attitudes and behaviours with the aim of extrapolating them to the family and/or social context.

The present work shows the results of the third module "Learning to Help and Cooperate" within the Programme for Developing Competent Social Relationships in PE (Trianes, 2012). The Programme involves three modules: (1) Improving the Class Climate; (2) Solving Problems with Schoolmates without Fighting; and (3) Learning to Help and Cooperate. The results on the effectiveness of the first and second modules have already been published (Sánchez, Rivas, & Trianes, 2006; Sánchez, Trianes, & Rivas, 2009). Programme activities involved a constructivist approach (Coll et al., 1995), cooperative learning (Pujolàs & Lago, 2011), democratic discipline (Castelló, Gotzens, Badia, & Genovard, 2010) and resolution of interpersonal conflicts (Monjas, 2007).

In the third module "Learning to Help and Cooperate", teachers are suggested to implement learning in Cooperative Groups (hereinafter CG), as an overall context where students can help each other, teach each other, share, collaborate and feel useful for the progress and results of their group. The module has

three parts. The general objectives are: learning to work in CGs, acquiring skills to benefit from working in CGs; overcoming obstacles inherent to cooperative work and generalising and consolidating cooperative and helpful attitudes and behaviours in further life situations. Activities suggested in this module were open and flexible and included cooperative work techniques such as role-play, debates and analysis of stories. A number of elements were constant in all the conducted PI sessions, such as learning or reinforcing a particular aspect of the work methodology in CGs, choosing a group leader democratically, democratic training of the CG, applying what has been learnt in classwork and CG feedback.

The PI of this study consisted of using the activities suggested in the third module as a method for teaching the subject *Conocimiento del Medio* (environmental studies) in the 3rd grade of PE. For example, there was an activity called "learning skills to work in cooperative groups" in the second part of the third module. The aim was to teach planning behaviour applied to work in CGs. The activity started by opening a dialogue with the class group on the need for a CG to have clear objectives, a work plan and a leader to ensure compliance with the objectives. Next, the steps to work in a CG were established: setting objectives, making a plan, assuming work responsibilities and evaluating the work done. Then, the roles of leader, animator and mem-

ber of the group were explained. Finally, a class project was carried out in CGs and an evaluation was conducted on how students worked in CGs. Feedback must include positive aspects, encourage students to use the steps and make suggestions for improvement for the next class project carried out in CGs.

Objectives

The present study aims at testing the effectiveness of a PI conducted on the third module of the Programme (Trianes, 2012), based on self-reports and sociometric data. In particular, the aim is to analyse the differences between students involved in the intervention and students that are not, in relation to the following variables: class social climate, school social climate, suffered school violence, observed school violence and sociometric variables. The hypothesis is that the intervened group (experimental group) will score higher positive results and lower negative results than the group not intervened (control group) in class and school social climate (Scenario 1), suffered and observed school violence (Scenario 2) and peer assessment (Scenario 3).

Method

Participants

The sample consisted of 78 schoolchildren (44 boys and 34 girls) from 4 classes of 3rd and 4th grade of PE, aged between 7 and 10 years old ($M = 8.62$, $SD = .76$), attending a public PE school in a town of the province of Malaga (Spain). The control group was composed of 38 students from 3rd and 4th grade (2 classes), while the experimental group was composed of 40 students from the same grades (2 classes).

Neither the school choice nor the assignment of students to groups was made randomly. The school where the research was conducted was the school assigned by the Ministry of Education of the Regional Government of Andalusia to one of the authors of this study (who is also a teacher). The experimental group was composed of the classes she usually teaches.

Variables and measures

The instruments used in the evaluation before and after the intervention are described below.

Questionnaire on School Social Climate. The questionnaire on the social climate of the school was designed by Trianes, Blanca, de la Morena, Infante and Raya (2006) and aims at analysing the social atmosphere of the school. It is filled out by students themselves and contains 14 items in a Likert response format and 5 answer options. Due to the age of the participants, the word "high school" —present in the original questionnaire— was replaced by "school". The analysis of the fac-

tor structure of the questionnaire was conducted by means of a principal component factor analysis with Oblimin rotation, as factors might be related. The factor structure showed the existence of two factors relating to school social climate (8 items) with a percentage of explained variance of 54.2%, and class social climate (6 items) with a percentage of explained variance of 45.6%. The correlation between the two was .45. The Kaiser-Meyer-Olkin measure of sample adequacy (hereinafter KMO) was .89 and Bartlett's test was statistically significant [$\chi^2(91) = 2689.4$, $p < .001$]. The reliability of the questionnaire was evaluated by internal consistency coefficient (Cronbach's alpha). Acceptable results were obtained in both factors (.77 and .72, respectively). The temporal stability of the questionnaire was evaluated by test-retest reliability. A satisfactory result was also obtained ($r_{xx} = .61$), after nine months.

Questionnaire on Everyday School Violence. The Questionnaire on Everyday School Violence (CU-VECO in Spanish) was designed by Fernández-Baena et al. (2011). It aims at analysing daily violence in schools and is filled out by students. It contains 14 items in a Likert response format and 5 answer options. The word "high school" —present in the original questionnaire— was replaced by "school", and the item "students use drugs" was removed as it was not deemed appropriate given the age of the studied sample. The analysis of the

factor structure of the questionnaire was conducted by means of a principal component factor analysis with Oblimin rotation, as factors might be related. The factor structure showed the existence of two factors relating to suffered violence (8 items) with a percentage of explained variance of 33.31%, and observed violence (6 items) with a percentage of explained variance of 15.51%. The correlation between the two was .30. The value of the KMO index was .88 and the Bartlett's test was statistically significant [$\chi^2(91) = 4082.38$, $p < .01$]. Internal consistency of the two factors in the questionnaire was assessed. Results were satisfactory (.85 and .74, respectively). The temporal stability of the questionnaire was evaluated by test-retest reliability. A satisfactory result was also obtained ($r_{xx} = .63$), after six months.

Sociometric Test. The sociometric technique uses the format known as "the class list", where each student assesses each classmate using given criteria. In this study, students were given five sociometric criteria: (1) you like him/her, (2) he/she helps others, (3) he/she hits others, (4) he/she annoys others and (5) he/she gets angry easily. Their response format had three options. Among the advantages of this format, it is worth stressing that each student rates and is rated by every other student (Aragón et al., 2002), the test-retest reliability is higher than in the nomination process and students getting negative

ratings do not stand out directly as happens with nominations (Trianes, De la Morena, & Sánchez, 1996).

In this research, the variables "hits others", "annoys others" and "gets angry easily" were summarised by a principal component analysis, similar to the one used in Trianes et al. (2002), which yielded a single score of physical aggressiveness, which was introduced in the analyses conducted. The variables "I like him/her" and "he/she helps others" were not summarised, as they belong to different areas, namely, social preference and prosocial behaviour, respectively.

Procedure

The relevant permits by the School Board, the school director and the families of participating students were granted to carry out the PI in a public school in the province of Malaga. As mentioned above, the experimental/control group was composed of students whose class groups were assigned to the teacher who is one of the authors of this study. The subject she teaches is called *Conocimiento del Medio* (environmental studies). Also, this circumstance could have meant students' familiarity to what she was suggesting, as well as confidence and everydayness in their perception of daily activities.

The PI Programme in the classroom ran in three stages. The first stage involved data collection (pre-test phase) and was held in September. The second stage consisted

of developing the PI, where the Programme was used as a teaching method in the *Conocimiento del Medio* class in 3rd and 4th grade of PE during the months of October to May. Sessions took place daily and lasted 45 to 60 minutes. The third stage involved data collection again (post-test phase) in June.

When applying the tests, doubts were clarified and students with reading comprehension difficulties were helped with understanding the items.

Data analysis

A pre-test/post-test design with the control group has been carried out in this study with the purpose of assessing the effectiveness of the third module "Learning to Help and Cooperate" of the Programme (Trianes, 2012). The variables studied were the social climate of the classroom, the social climate of the school, suffered school violence, observed school violence and variables with a sociometric format.

Analyses of covariance (ANCOVA) were performed, where the factor was the group variable with two levels (control and experimental). The dependent variables (DV) were the scores of the variables in the post-test and the covariates were scores of the same variables in the pre-test.

Results

Firstly, for the sociometric variables "annoys, hits and gets angry eas-

ily", an exploratory factor analysis of principal components was performed on both the pre-test and post-test scores, as has been done in previous research studies (Trianes et al., 2002). Regarding the pre-test, a KMO value of .76 was obtained and the Bartlett's test of sphericity proved to be significant [$\chi^2(3) = 232.23, p < .001$], which shows that data was adequate to be factored. The analysis showed a single dimension that explains 90.361% of the variance and that will be called "Physical Aggressiveness". As for the post-test, the principal components factor analysis showed a KMO value of .71 as well as statistical significance on the Barlett's test of sphericity [$\chi^2(3) = 185.87, p < .001$]. Again, the factor solution showed a single dimension that explains 86.22% of the variance and matches the one obtained in the pre-test scores. Tables 1 and 2 show the results of correlations of the exploratory factor analysis of the variables "annoys, hits and gets angry easily", together with the factor loadings obtained.

Table 1

Correlation Matrix

		Hits	Annoys
	Hits		
Pre	Annoys	.91***	
	Gets angry	.82***	.83***
	Hits		
Post	Annoys	.80***	
	Gets angry	.71***	.87***

* $p < 05$.   ** $p < .01$.   *** $p < .001$.

Table 2

Factor Loadings

		Loading
	Hits	.96
Pre	Annoys	.96
	Gets angry	.93
	Hits	.81
Post	Annoys	.92
	Gets angry	.86

Next, results on the effectiveness of the applied programme will be discussed. Regarding the variable class social climate, the ANCOVA analysis shows statistically significant differences in adjusted means between the control group and the experimental group [$F(1,75) = 5.83$, $p < .05$, $\eta^2_{parcial} = .07$]. The scores in class social climate in the experimental group were higher than in the control group after the intervention. The assumptions of normality, homogeneity of variances, relationship between the covariate and the DV, and homogeneity of regression coefficients were met. Table 3 shows the means, standard deviations and adjusted means.

The ANCOVAs for the social climate of the school, observed school violence and suffered school violence did not show statistically significant differences in the adjusted means between control group and experimental group after the intervention. Table 3 shows the means, standard deviations and adjusted means for these variables.

An analysis was also conducted on the set of sociometric variables used in this research: help, like and physical aggressiveness. As for the variable "help", an ANCOVA analysis was conducted, which showed statistically significant differences between the adjusted mean of the control group and that of the experimental group [$F(1,77) = 25.61$, $p < .001$, $\eta^2_{parcial} = .25$]. After the intervention, the experimental group scored a higher mean in the "help" variable than the control group. The assumptions of normality, homogeneity of variances, relationship between the covariate and the DV, and homogeneity of regression coefficients were met. Table 4 shows

Table 3

Descriptive Statistics: Mean, Standard Deviation and Adjusted Mean for the Variables: Classroom Social Climate, School Social Climate, Observed School Violence and Suffered School Violence

		M	SD	adjusted M
Classroom Social Climate	Control Group	26.71	2.55	26.56
	Experimental Group	27.68	2.31	27.82
School Social Climate	Control Group	33.53	4.76	33.42
	Experimental Group	32.38	5.06	32.48
Observed School Violence	Control Group	12.38	5.14	12.87
	Experimental Group	13.55	5.36	13.06
Suffered School Violence	Control Group	15.63	6.80	16.81
	Experimental Group	16.93	7.55	15.73

Table 4

Descriptive Statistics: Mean, Standard Deviation and Adjusted Mean For the Sociometric Variables

		M	*SD*	adjusted *M*
Help	Control Group	1.45	.93	1.32
	Experimental Group	1.59	.94	1.73
Like	Control Group	1.59	.74	1.47
	Experimental Group	1.88	.82	1.99
Physical Aggressiveness	Control Group	.05	.86	.13
	Experimental Group	−.05	1.13	−.13

the means, standard deviations and adjusted means.

As for the variable "like", another ANCOVA was performed, in which all the test assumptions were met. Analyses showed statistically significant differences between the adjusted mean of the control group and that of the experimental group [$F(1,77) = 27.20$, $p < .001$, $\eta^2_{parcial} = .26$]. After the intervention, the experimental group scored a higher mean in the "like" variable than the control group. Table 4 shows the means, standard deviations and adjusted means.

Finally, an ANCOVA was performed on the group factor, in which the DV was the factor scores of the Psychical Aggressiveness dimension in the post-test phase, and the covariate was the factor scores of the same dimension in the pre-test phase. The ANCOVA assumptions were met. Analyses showed statistically significant differences between the adjusted mean of the control group and that of the experimental group [$F(1,77) = 6.17$, $p < .05$, $\eta^2_{parcial} = .07$]. After the intervention, the experimental group scored a higher mean in the factor scores of the Physical Aggressiveness dimension than the control group. Table 4 shows the means, standard deviations and adjusted means.

Discussion

The present research has attempted to evaluate the effectiveness of the third module of the Programme (Trianes, 2012). Evaluating published programmes on psychoeducational interventions is a good practice, as otherwise they would be nothing more than well-intentioned programmes without proven effectiveness and, therefore, their use may not yield the expected results (Herrera & Olmos, 2009).

This research has shown that the third module of the Programme in question offers significant results when it comes to improving the

school coexistence from the point of view of students (self-reports) and peer-assessment. Any intervention aimed at improving a specific aspect such as a cooperative and helping behaviour will often find that, along with this aim, other key aspects of child development and interpersonal relationships will also improve, such as interpersonal attraction and a decrease in frequent physical aggressiveness in Primary Education (Pérez, 2007). Therefore, when evaluated, those programmes aimed at improving school coexistence often obtain overall results, even though they aim to improve specific aspects of interpersonal relationships (Díaz-Aguado, 2005).

Firstly, the results of this study showed that the social climate of the classroom significantly improved in the experimental classes, whereas not so that of the school. Thus, the first hypothesis of this study was partially met, as only the class social climate improved, but not the school social climate. The improvement of the class social climate may be explained by the fact that the class is the nearest context to participating children, hence it is easier to observe an improvement here than in the social context of the school. Increasing the assistance offered to others has an impact on improving the classroom social climate (Romersi, Martinez-Fernández, & Roche, 2011). In line with other research studies, working in CGs enhances the acquisition of social skills, thus generating a better communication in the

groups, based on trust, and strengthening the relationship between group members (Denegri, Opazo, & Martínez, 2007). In addition, when working in CGs, students learn to overcome frustration and solve problems with each other (Kershner, Warwick, Mercer, & Staarman, 2014), which can have a positive impact on the social climate of the classroom.

Secondly, results showed that neither suffered nor observed school violence decreased significantly, so the second hypothesis was not fulfilled. The latter results are not in line with other authors' findings, whose results show that, by increasing cooperative and helping behaviour, the social climate is improved and aggressiveness is decreased (Chen & Wei, 2011; Ward, 2013). As for observed and suffered violence, the school in question does not report violence issues, nor is the context of the school problematic, which may explain why the pre-test/post-test scores did not change.

Thirdly, the sociometric scores (help, like and physical aggressiveness) turned out to be sensitive to the conducted PI, as these are aspects that appear in students' immediate context and are perceived with no need to influence the students. Therefore, the third hypothesis was met. Thus, the scores of children who help others increased after the PI. This is consistent with further research studies that found that children who are taught to cooperate show more support and attention to their peers (Golub & Buchs, 2014).

This result directly refers to the objective of the third module of the Programme, i.e. to increase cooperative and helping behaviour. Indeed, helping others is a very attractive behaviour in childhood. Children who help others are usually accepted (Monjas, Sureda, & García-Bacete, 2008) and popular (Lansford et al., 2006). There is no doubt that teaching them to help will certainly help them to be happy in life. Furthermore, helping others reduces antisocial attitudes and behaviours, and increases school adaptation (Switzer, Simmons, Dew, Regalski, & Wang, 1995). Helping behaviour also benefits both sides: the person who gives the help and the person who receives it (Topping, 2005). When it comes to assertive behaviour of support and understanding, it is important for teachers to expect a skilful response from both boys and girls. Otherwise teachers may promote gender-stereotyped responses (Fagot, Hagan, Leinbach, & Kronsberg, 1985).

The sociometric results obtained on the "liked by others" aspect reinforce the result that interpersonal attraction increased after carrying out the PI, which is clear from the increase in the "like" and "support" criteria, that is, two relevant behaviours within the scope of interpersonal attraction. This type of behaviour also makes schoolchildren happy. In fact, these are results educators and families dream of. Moreover, PIs, conducted through this type of programmes, are useful for correcting the tendency to maintain a low sociometric acceptance during school years (Cillessen, Bukowski, & Haselager, 2000).

The decline in sociometric physical aggressiveness after the PI paints an encouraging picture of relationships based on interpersonal attraction. When positive scores such as "like" and "help" are increased, physical conflicts such as fights and physical aggressions decrease. What is more, children who are rarely accepted by their peers often show aggressive behaviour (Prinstein & La Greca, 2004). Additionally, the lack of friends increases the possibility of victimisation, and, therefore decreases popularity (Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004). Finally, because of the above reasons, developing prosocial behaviour decreases aggressiveness (Mestre, Samper, & Frías, 2002). The physical aggressiveness criteria were chosen due to the age of the participating children, who are in 3rd and 4th grade of PE. It is common for children of this age to brawl using physical aggression (Ayala, Pedroza, Morales, Chaparro, & Barragán, 2002). Furthermore, PE children show a tendency to be more aggressive with their peers (Etxebarria et al., 2003) so the decrease in aggressive behaviour could be interpreted as a result associated with cooperative and helping behaviour in the classroom.

As for the Programme (Trianes, 2012), it has proven to be effective in its three modules, with published

results concerning modules 1 and 2 (Sánchez, Rivas, & Trianes, 2006; Sánchez, Trianes, & Rivas, 2009). The assessment of the third module completes the evaluation of this instrument, which will be helpful to conduct PIs aimed at improving coexistence and promoting students' comprehensive development.

Finally, it is worth stressing the importance for teachers to have an educational intention in the teaching-learning process. Only then will the effectiveness of their work be multiplied, as they are not only meant to teach the curricular contents but also contribute to improving the social climate of the classroom and promoting students' comprehensive development. The overall results of this study emphasize the importance of carrying out programmes —in Nursery and Primary Education— to promote social-emotional development, positive interpersonal relationships and social responsibility among students. An effective way to achieve a culture of peace is by promoting cooperative and helping behaviour in the classroom, which will later be replicated during recess and outside school. It is in this context where the proposal of the third module of the Programme "Learning to Help and Cooperate" is located (Trianes, 2012). This PI has proven to be an effective tool and has been experimentally validated. As future lines of research, the present study may suggest the evaluation of the effect of the third module of the Programme on different variables, such as: adapt-

ability, leadership, social skills, study skills, hyperactivity, attention deficit and behavioural problems.

A limitation of this study is represented by the difficulty to generalise the teaching methodology of the Programme. With regards to the sources of information, in addition to self-reports and peer-assessment, information from teachers and family could also be considered. In general terms, it is deemed appropriate to carry out the evaluation of the Programme by expanding the sample size and the sources of information.

The advantages of working in cooperative groups are many and varied, as shown by plenty of research studies (Cobas & Ortega, 2014; Gillies, 2014; Lavasani, Afzali, & Afzali, 2011; Law, 2014; Tarhan, Ayyıldız, Ogunc, & Sesen, 2013), whose findings are relevant and allow suggesting the desirability of carrying out PIs in order to promote cooperative and helping behaviour among PE students. Likewise, fostering a participatory methodology among teachers in these educational levels in order to make CG work dynamic in view of promoting peer support, could also be an effective strategy to promote a positive coexistence and minimise the levels of daily violence at school. The authors of this study plan to continue this line of work on cooperative and helping behaviour. We are moved by the conviction that society needs people to help and cooperate, and that this can only be achieved by educating future citizens.

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