Effects of a Cooperative Game Program on Socio-affective Relations and Group Cooperation Capacity

Maite Garaigordobil, Carmen Maganto and Juan Etxeberría

País Vasco University, Spain

This research studies the effects of a friendly and cooperative game-program on child socio-affective relations and group cooperation capacity, between ages 6 and 7. For this purpose 125 experimental subjects were compared with 53 control subjects, using a pretest-intervention-posttest design. The intervention consisted of 22 play sessions carried out during one academic year. Each session lasted between 60 and 90 minutes, in which 4 or 5 game activities took place. The 54 games in the program encouraged the children to take part, accept others, co-operate, and share as well as to develop their symbolic play and to enjoy themselves. Results show that the program induced the experimental subjects toward positive changes in the socio-affective relations within the groups, as well as group cooperation capacity.

Keywords: Play, games, cooperation, prosocial behavior, assessment of psychoeducative interventions

Introduction

This work, part of a wider research (Ph.D. Garaigordobil, 1992 a), is an empirical study on children's play. Its main objective is to assess the effects of a game-program, based on friendly, cooperative and peer-helping games in socio-affective relations, as well as in cooperative intra-group relations in school.

The Importance of Play to Child Development

During the last century numerous studies of different epistemological approaches have analyzed the close links between games and integral development concluding that play is a vital activity to human development. This body of observational and experimental research implies that playing has a close relationship with child development (Isenberg & Quisenberry, 1988; Garaigordobil, 1990; 1992 ab; 1995; 1996; Fisher, 1992; Gordon, 1993; Göncü, 1993). While playing, children learn, discover nature and the properties of objects (Newson & Newson, 1979/1982), use their knowledge, explore new things, make progress and mistakes, and solve problems (Garvey, 1977). All this stimulates their thinking capacity (Vygotsky, 1933/1982; Piaget, 1945/1979; Piaget & Inhelder, 1969/1984; Mujina, 1975/1978;

Ortega, 1986), their verbal capacity (Garvey, 1977; Bruner, 1986) and their creativity (Vygotsky, 1933/1982; Winnicott, 1971/1982; Bruner 1986; Oliveira, 1986).

Moreover, it has been found that play is an important instrument for communication and socialization due to the fact that children discover adult social life and its ground rules (Mujina, 1975/1978; Ortega, 1986), they interact and cooperate with their peers (Kamii & Devries, 1980/1988) and develop moral awareness as a result of learning behavioral patterns (Elkonin, 1978/1980; Pardos et al., 1988). In this wide relational context they also get to know the people around them as well as themselves. The above are some of the explanations why playing has a relevant role in social adjustment (Imeroni, 1991).

Other researchers (Winnicott, 1971/1982; Arfouilloux, 1977) who have analyzed game's influence on children's affective-emotional development have concluded that playing is a source of pleasure. It is an activity which entitles children to express themselves freely, to focus their vitality and to unwind. Thus, it is a very important factor for emotional balance.

Some studies with a "pretest- – sociodramatic game program – posttest" design have supported to have significant repercussions in child cognitive and social development. These studies have verified the positive effect of these game-programs on the role-

taking capacity (Rosen, 1974; Smith & Syddall, 1978; Ianotti, 1978; Burns & Brainerd, 1979), on cooperative attitude (Marshall & Hahn, 1967; Rosen, 1974) and on social skills (Smilansky, 1968; McCune-Nicolish, 1981), that is to say, on socialization processes. Furthermore research has shown progress, in cooperative solving of relational problems (Shores, Huster & Strain, 1976) and in language development (Saltz, Dixon & Johnson, 1977; Marbach & Yawkey, 1980; Bruner, 1986; Levy, Wolfgang & Koorland, 1992).

However, these studies are not free from criticism. Some studies (Burns & Brainerd, 1979; Rosen 1974; Saltz, Dixon & Johnson, 1977; Smilansky, 1968; Smith & Syddall, 1978) used measures with validity problems, and sometimes there isn't clear whether controls were adequate.

On the other hand, experimental works about cooperative games have showed a positive effect of cooperative games on socialization. Orlick (1981) pointed out that this kind of games increased sharing behaviors, and Mender et al. (1982) revealed that cooperative games performed with disabled children increased their coooperative social responses of learning. Later, Blazic (1986) observed an increase of participation, and recently, Grineski (1991) has showed that these games encourage prosocial behaviors.

Cooperative Behavior Studies

Several studies (Eisenberg & Mussen, 1977; Sterling, 1990) point out that there are many factors which affect children's prosocial behavior. Currently, there is evidence that sociocultural rules and values stimulate individuals of one culture to maintain prosocial or non-prosocial patterns with others (Mead, 1937/1961). Variables in the family have also been studied and it has been confirmed that there is a positive relationship between prosocial behavior and parents who show altruistic roles (Morishita, 1990) and parents who use inductive or reasoning techniques (Hoffman, 1983).

Among other factors, school experiences have a great influence on child's prosocial behavior as well. School peers are models and reinforcing agents of children's altruistic behaviors (Hoffman, 1983) and they have a relevant role in their moral development (Piaget, 1932/1974; Kohlberg, 1976).

Finally, we can also see a direct relationship between prosocial behavior and cognitive development (Bar-Tal, Raviv, & Sharabany, 1982), taking-perspective capacity (Froming, Allen, & Jensen, 1985) and ability to sympathize (Fultz, Batson, et al., 1986; Eisenberg & Miller, 1987; Fuentes, 1990). Recent studies such as Sterling's (1990) confirm that prosocial behavioral development is certainly a complex matter which depends on numerous inter-related variables, but, nevertheless, Sterling suggests the efficiency of training programs to acquire guide lines in altruistic behavior.

Studies cited in the following paragraphs have already demonstrated the benefits of cooperation versus competition in some development factors. A cooperative situation is described as one in which the goals of the participants are related in such a way that each subject will only achieve his goal if the rest invariably achieve their own.

Experiments carried out by Deutsch (1971) reveal that cooperative groups, as opposed to competitive groups, had more efficient communications among their members, being able to verbalize more ideas while better accepting their partners' ideas. They showed better coordination and effort, a greater distribution of tasks and higher productivity, as well as a greater faith in their own ideas due to the consideration received from other partners. Furthermore, subjects in cooperative groups helped each other more, met mutual needs better and highly praised their partners' actions. Another set of studies has also confirmed the role of cooperative interaction to decrease conflicts between groups (Sherif et al., 1961).

In general, experts agree that cooperative learning experiences, in contrast with competitive or individual ones, favor more positive relations between peers, such as sympathy, attention, good manners, and mutual respect (Coll, 1984). Furthermore, surveys provided by Vygotsky also confirm that cooperative tasks in which subjects have to assume different complementary roles and use language to guide and be guided when solving problems, involve a type of social regulation that help subjects solve complex problems which would have been impossible to solve if they were attempted individually. Thus, it is concluded that establishing cooperative relations characterised by role coordination, mutual control of the task, and allocation of responsibilities within a group favor a positive effect in the problem-solving process.

Gelb and Jacobson (1988) observed that unpopular children showed less negative or immature behaviors in a benign, tension-free, atmosphere. Also, their peers were more tolerant with them in the cooperative tasks. These results match what Rué (1989) obtained after different educational experiences: performance in cooperative work is higher

than in competitive or individualised work, and it also improves classroom atmosphere and interpersonal relations within the group.

Wilder and Shapiro (1989), while studying the influence of cognitive processes on interpersonal relations, showed that the expectation before a competitive meeting with a group generates such anxiety that the positive behavior of the members of the group decreases greatly. This research showed a higher level of anxiety before a competitive meeting than before a cooperative one. Lanzetta and Englis (1989) also analyzed the expectation before cooperative and competitive encounters, together with their effect on vicarious emotional responses, and they concluded that expectation before a cooperative meeting generated empathetic emotional experiences, whereas expectation before a competitive meeting generated counter-empathetic experiences.

These results highlight the influence of contextual factors on children's social abilities and confirm, first, the positive effects of a cooperative interaction to improve the individual results of children with academic handicaps (Slavin, 1980, 1983), and second, a greater interaction between children with and without academic handicaps when solving math tasks in a cooperative situation, as compared to an individual one (Johnson & Johnson, 1981).

Regarding the influence of the different types of social organization that learning activities have on the level of performance of the participants, Johnson et al. (1981), concluded that cooperative situations yield higher results than competitive situations in terms of performance and productivity of participants, especially when forming concepts, solving problems and working things out. Other well-known researchers (Slavin, 1983, 1990; Johnson & Johnson, 1986; Stevens & Slavin, 1991) confirmed that such learning situations lead to an increase in school performance, in several prosocial behaviors, and in peer acceptance.

In summary, the studies in the cited literature suggest that playing, as much as intragroup cooperation, has an important role in child development.

The purpose of this research was the assessment of the effects of participation in a friendly, cooperative game program on the socio-affective relations and on group cooperation capacity. This study has two main hypotheses. First, the participation in the game program brings about improvement, within experimental groups versus control groups, in socio-affective relations by stimulating new leaderships and by reducing rejection which is highly focused on a particular member of the group. Second, intervention improves cooperation capacity by increasing

behaviors which make cooperation possible and by reducing disturbing behaviors, in addition to reducing the execution time needed to achieve a cooperative task.

Method

Design

This study used an experimental Pretest-Intervention-Posttest design, where 6 experimental groups and 2 control groups were compared. The game program was the independent variable in this multigroup design, while socio-affective relations and group cooperation capacity were the dependent variables.

Subjects

The make-up of the sample was 178 children from ages 6–7 (1st grade in elementary school) distributed among 8 classrooms in the province of Guipúzcoa, Northern Spain. The children in these classrooms had already been placed there and formed what we can call "natural groups"; that is to say, the school takes the list of pupils and distributes them into classrooms trying to have an even number of each last name initial in every class, with the exception of brothers or sisters who are usually placed in different classrooms. 125 children (6 groups) underwent the game-program and 53 (2 groups) were determined as control.

The groups were selected according to two criteria. First, they were chosen among different schools, private and public, rural and urban. Therefore, they represented to various socio-cultural and economic environments. Second, the characteristics of the teacher were taken into account, mainly due to the special requirements of the investigation. Each experimental teacher had to be able systematically to apply one game session per week over the whole school year and all teachers attended a training course every fortnight where they were taught how to conduct the experience in the classroom. This obviously meant the teachers needed be motivated.

Two control groups were chosen at random out of the 8 groups of subjects. The groups remained unchanged throughout the whole course. The experimental groups underwent the game program in the same school they were attending and during their usual school hours. Thus, they had no especial attention out of their schedule which would have affected

the internal validity of the experience. While the experimental subjects were having the game sessions, the control groups had their usual school activities such as mathematics, grammar, etc.

Instruments

With the purpose of seeking evidence of the influence of the game-program in development, an assessment took place before and after the intervention. The measured factors were sociometric relations and group cooperation capacity.

First, J.L. Moreno's "Sociometric Questionnaire" (Moreno, 1934/1972; Silva & López, 1983) was administered after being adjusted to children of this age. This questionnaire defines the socio-affective relations in the classroom, making it easier to establish peer status for popular and rejected children in concepts such as "playmate" and "working-mate". Each child points out the names of two of his peers he would like to have as playmates, two as working-mates, two he would not like to have as playmates and two he would not like to have as working-mates. With this data, a sociogram was put together in both phases of the assessment to determine choice and rejection of playmates and working-mates. This graphic representation of the socio-affective relations within the groups was used to determine the leaders, the rejected children, and the isolated ones within each of the groups, as well as the number of choices and rejections each child had made. The pre-test-posttest analysis was focused on changes of status (leader, rejected, isolated) among peers (an individual analysis was carried out for each subject) and, on changes in intragroup communication nets (subgroups or communication nets before and after the program). Here, the units of measurement were qualitative.

Second, group-cooperation capacity was measured. For this purpose a cooperative game called "a game of squares" was transformed into an observation instrument for group-cooperation (Garaigordobil, 1992 ab). Previous to this study, different experiments were carried out with subjects not belonging to the sample, in order to define the application and the observing procedure of this instrument. Initially, the squares had 4 or 5 pieces each, but this amount increased the cognitive difficulty of the game. Then, one side of each square was colored, which turned out to be too easy. Finally, the game was composed of a set of 5 squares of 12 cm, each of the squares having 3 white pieces bearing a color reference so as to make the assemblage easier, as is
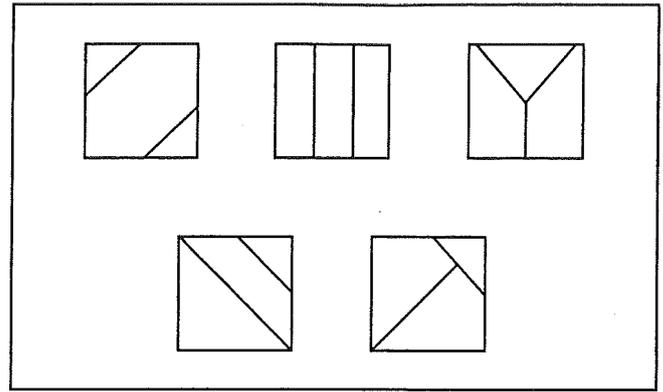

Figure 1. Display of "The game of the squares".

shown in the graphic "The game of the squares" (see Figure 1).

For the game itself, children are arranged in teams of 5, each of them receiving an envelope with three pieces. Putting the children's 3 pieces together they can make 5 squares, but to be able to succeed they must share the pieces with their playmates since each of the pieces each child has belongs to a different square making it impossible to do so individually. The purpose of the game is for children to give and receive help (pieces) with a common goal (to make the 5 squares) which will only be achieved if they cooperate with one another.

Each team of 5 was taken to a separate room where they were filmed on video tapes while playing. Then, a pattern was designed to analyze the interactions in the game. This was done following Angera's procedures for observational methodology (1988, 1991). In the first place, the execution in all teams was observed without a predetermined pattern and all behaviors and interactions which took place in the cooperative activity were registered. Later on, the categories thought to have a greater relation with cooperation were chosen and operationally defined. Subsequently, positive behaviors such as "giving–taking" "asking–receiving" and "helping", and negative behaviors such as "refusing to give" and "taking away" were defined. In the second place, 5 observers watched the teams' execution in both phases of the assessment in order to register the sequence of interaction of each child throughout the game.

Afterwards, these behaviors were quantified for each group. The units of measurement were the raw scores of each team for the variable "time" and for "5 assessed behaviors". All variables were measured with an interval scale.

Procedure

Our study was conducted over one year. At the beginning of the school year a pretest assessment was carried out in all 8 groups. After this, the 6 experimental groups had one session of the game program per week during 8 months. Finally, the posttest assessment was done at the end of the school year.

In the assessment, first, the sociometric questionnaire was administered individually. Second, the groups were arranged into teams of 5 subjects each (according to alphabetical order) that performed the cooperative task "the game of the squares" while being recorded on video tape. The procedure of the treatment was rather long and it is fully described in the following section.

The research team consisted of 17 professionals (psychologists and teachers) who underwent a group training session every two weeks. The training was focused on theoretical concepts related to the game program and on the methodology needed for its application.

Intervention

The intervention was the administration of a friendly-cooperative peer-helping game program. It was conducted in 22 game sessions in each classroom, that is to say, once a week over the school year and in 60 to 90-minute periods in which 4 or 5 games took place. All sessions were held in a large and barrier-free classroom on the same day of the week and at the same hour.

The intervention program was designed by Garaigordobil (1992 a) as follows: first, selecting the most interesting games (out of a 1,500-game-collection) and classifying them according to the type of behavior they stimulated (communication, help, cooperation...) and, second, designing the procedure of the intervention. Some of the games chosen belong to the pioneer experiences in cooperative games carried out by Orlick (1978, 1988), and some are adapted versions of competitive games in which rules were modified so as to make them cooperative.

The 54 games used in the program have 5 distinct characteristics: (a) Participation – everybody takes part, nobody is left out or loses; (b) Acceptance – each player has a significant and necessary role in the game; (c) Cooperation – the game policy leads the players to help each other towards a common goal, a group goal; (d) Fiction – you play to imitate real life, "let's be ... snakes, trains, bells, blind, ... "; and (e) Joy – the aim is that children have a good time while interacting in a constructive positive way with their peers at school.

Furthermore, the game-program is arranged in six categories, depending on the difficulty involved in each game and the main social factor it deals with. In the first category, introductory games are included to stimulate the familiarization of the members.

In the second category, there are verbal and nonverbal communicative games to promote both communication within the group and active peer-listening habits. For instance, in the "Musical Hugs" activity, all the players freely dance to background music around the classroom, and then the teacher stops the music and they have to hug one of the nearest children and remain like this until all of them find a couple. When the music starts again, they separate and dance freely once more. They go on dancing and subsequently hugging 5 or 6 times. Another example of a communicative game could be the "Story thought in group". Children, taking turns to narrate, make up a story as if it was a single narrator. Great attention is needed so as to coherently follow what has already been told in previous passages.

In the third category, games whose objective is to give and receive help are included. One such game is "Sand bags", in which all the players walk around the classroom carrying a sand bag on top of their heads. If the sand bag falls, the player freezes and has to wait without moving until another player replaces the sand bag so he/she can walk again. This game takes about 10 minutes and is played with background music. In the fourth category, the games are meant to stimulate faith in themselves and others.

In the most significant category, the fifth, there are cooperative games which cannot be done correctly if the players do not give mutual help in order to achieve group goals. An example of this is the "Cooperative jigsaws or puzzles". In this game all players start with the same number of pieces which belong to one puzzle. They first discuss which order they will follow (taking turns, or arbitrarily if one sees his/her pieces match) in order to finish the puzzle. There are several activities which share this cooperative structure, including "modelling with clay or play dough", "construction games with big wooden pieces", "finger painting in groups", etc. In this category there are also included some cooperative body-games, such as the one in which 3 or 4 players make a snake with their bodies and, coordinating their movements, have to creep around the classroom, avoiding rivers, climbing mountains, etc. Finally, the last category includes cooperative sociodramatic games which promote children's cooperation and emotional expression through drama.

Taking into account the structure of the sessions, we can differentiate three stages: (a) the opening, in which for the first 5–10 minutes the children sit on the floor in a circle and the teacher reminds them of the aim of the games (to play in a friendly, cooperative way and to help each other) and explains how the first game is played; (b) the playing, in which children take part in 4–5 consecutive game activities; and (c) the closing stage, when, for the last 5–10 minutes the children discuss the positive and negative points of the session (how much they enjoyed themselves, everybody's participation, difficulties faced in organization, how much they stuck to the rules, how much they cooperated, if any player was excluded).

The sequence of the games in each session is designed by the teacher who conducts the intervention and by the outside observer who collaborates by registering in a diary, in a narrative style, all the interactions observed in each session. They select the games and decide the order of presentation. This flexibility allows a different layout so as to suit the specific features of each group or the events in previous sessions.

Results

Changes in Socio-affective Relations

To investigate the effects of the treatment on the socio-affective intragroup relations, a qualitative analysis was carried out using the data in the Sociometric Questionnaire. Sociograms were constructed for each classroom so as to be able to analyze pretest-posttest changes in the socio-affective intra-group layout. Four variables were included: choice of playmate, choice of working-mate, rejection of playmate and rejection of working-mate.

Analysis conducted on observed pre-post changes in sociograms of the 8 groups and further comparison between experimental and control groups confirmed positive evolution of experimental groups owing to the effect of the friendly-cooperative peer-helping game program. This intervention stimulated major structural changes in socio-affective relations.

On the "choice of playmate and working-mate" variables the intervention reinforced deeper knowledge among children in experimental groups, favoring the following: (a) Consolidation and higher results in leadership capacity for children who had already been chosen in pretest phase; (b) Appearance of new leaders able to organize and invigorate group-playing activities during free game situations

in the classroom; and (c) more acceptance intra-group. However these structural changes did not take place in control groups, where group organizational changes were rare. There was a lack of significant children in posttest who acted as integrators or leaders in the games.

On "rejection of playmate and working-mate" the experimental groups underwent the following transformations: (a) They moved from a pretest situation where rejection was highly focused on one of the members, to a distributed rejection in posttest, where rejection was spread among several members of the group and moving from one another without particularly focusing on one subject; and (b) Subjects who had previously been rejected changed in the posttest phase.

In control groups we observed that there were no changes in one of them (Group 8) and rejected subjects in pretest were still similarly rejected in posttest. In the other control group (Group 7) there was a transfer of the rejection, although extremely focused on one member of the group who received 70% of the rejection.

According to these results we can infer that the game program had a noteworthy effect on some of the experimental groups where rejection was distributed and transferred. At the same time a decrease in the focusing in one subject was stimulated. This suggests that the game program might have discouraged some of the negative interactions, such as the extreme rejection of one subject clearly seen in control group 7 which never happened in the experimental groups.

Changes in Group Cooperation Capacity

To investigate the effects of the treatment on group cooperation capacity we used a means-comparing analysis (*t*-test) to assess changes in posttest-pretest. All these analyses were carried out using the SPSS/PC+ program, and were conducted to measure execution time in the task "The game of the squares", and the positive and negative behaviors for cooperation, in one minute of execution of the cooperative task. The sample consisted of 8 "natural" groups or full classrooms, divided into teams of 5 subjects to perform the task resulting in 25 experimental teams and 11 of control to operate the analysis.

First, group means and standard deviations were obtained for the execution time that subjects needed for achieving a cooperative task in both phases of the assessment. Then, it was analyzed as to wheth-

Table 1. Difference of posttest-pretest means, standard deviations, and *t*-test for execution time of cooperative-play task "The game of the squares".

Group	n	Pretest M	SD	*p*	Posttest M	SD	*p*	Post-Pre M	SD	*p*
Experi	25	9.96	6.06		1.60	.70		−8.36	6.02	
Cntrol	11	8.81	4.77		6.27	3.58		−2.54	4.39	
Exp-Ctrl				.550			.001			.003

er there were any significant differences (*t*-test. *t* < .05) between experimental and control teams in both post and pretest phases and in their post-pre differences. Obtained results are indexed in Table 1.

The data in Table 1 show that 25 experimental teams, as opposed to 11 control teams, significantly reduced the time needed to finish a cooperative group task. While experimental teams reduced the execution time by 8.3 minutes, the control teams only reduced it by 2.5 minutes. They did not have any significant differences in the pretest phase, and yet they showed significant differences pretest-posttest (t(34) = −3.25, *p* < .005). This verifies the effectiveness of the cooperative program in increasing cooperation capacity in experimental subjects. Development of this capacity is stimulated and can be seen in the learning of efficient strategies leading to the quick execution of activities which require a contribution from all members of the group in order to achieve a common goal.

To be able to assess the effect of the game-program on group cooperation capacity, sequences of the interactive behavior that each child showed while doing the task were registered in both phases of the assessment. For instance, gives – takes – helps – gives – gives – receives – asks – receives – finishes the square. Later, this sequential observation was quantified so as to see whether the conducted intervention stimulated an increase in behaviors that make cooperation easier or a decrease in behaviors that disturb cooperation.

After having observed and registered all the behavioral sequences of the 36 teams in the sample we proceeded to quantify the frequency of the five interactive assessed behaviors (give–take, ask–receive, helping, refuse to give, and take away) in each team, for the whole execution time of the game of the squares, in both pretest and posttest phases.

However, the frequency of these behaviors is in direct relation to the execution time of the whole task. The longer it takes the more frequent these behaviors are. That is why the team frequency of these behaviors was related to the time they needed for the execution of the task. Thus, we obtained the team frequency in each behavior for one minute of the execution time in both phases.

Based on this data, the means and standard deviations of experimental and control teams were found, in both phases of the assessment, as well as in the post-pre differences. Then we performed an analysis to see if there were any significant differences (*t* < .05) in both post and pretest phases and in their post-pre differences. The same procedure was carried out with the five assessed behaviors.

An assessment of the program was conducted to see to what extent the program stimulated behaviors which make cooperation easier. The following behaviors were considered: (a) give and take pieces simultaneously, (b) ask and receive consecutively, and (c) helping a peer. The results for these behaviors are displayed in Tables 2, 3 and 4.

Taking into account the three positive behaviors for cooperation, this data confirms that there were not any significant differences between experimental and control teams in the pretest phase, but there were some significant differences in the posttest phase and in the post-pre differences. This shows that experimental and control teams were homogeneous in the beginning and the significant differences are due to the one-year intervention.

The data obtained in interactive behaviors of reciprocal help – "give and take simultaneously" – showed, in experimental teams, a significant evolving increase of behaviors which make cooperation easier. The difference of post-pre means in experimental teams (M = 4.20) was much greater than in control teams (M = 0.44). The differences pre-post between them were also significant (t(34) = 5.65, *p* < .001). This corroborates that the cooperative game program provided significant improvement in behaviors of reciprocal help.

In addition to this, significant differences between experimental and control teams can be observed in interactive behaviors of "asking and receiving consecutively". Experimental groups showed an increase of this kind of interaction (M = 1.55), while control teams decreased (M = −0.17). Differences pre-post between them were significant (t(34) = 3.41, *p* < .005). Global results confirm that the cooperative

Table 2. Difference of posttest-pretest means, standard deviations, and *t*-test for one minute of execution in "give–take" behaviors.

Group	n	Pretest M	Pretest SD	p	Posttest M	Posttest SD	p	Post-Pre M	Post-Pre SD	p
Experi	25	1.09	.90		5.30	2.61		4.20	2.79	
Cntrol	11	1.22	.72		1.66	1.13		0.44	1.20	
Exp-Ctrl				.665			.000			.000

Table 3. Difference of posttest-pretest means, standard deviations, and *t*-test for one minute of execution in "ask–receive" behaviors.

Group	n	Pretest M	Pretest SD	p	Posttest M	Posttest SD	p	Post-Pre M	Post-Pre SD	p
Experi	25	.25	.25		1.80	2.46		1.55	2.46	
Cntrol	11	.43	.30		.25	.22		−0.17	.39	
Exp-Ctrl				.098			.005			.002

Table 4. Difference of posttest-pretest means, standard deviations, and *t*-test for one minute of execution in "help" behaviors.

Group	n	Pretest M	Pretest SD	p	Posttest M	Posttest SD	p	Post-Pre M	Post-Pre SD	p
Experi	25	.07	.10		.98	1.04		.91	1.06	
Cntrol	11	.17	.25		.47	.45		.29	.43	
Exp-Ctrl				.206			.048			.018

Table 5. Difference of posttest-pretest means, standard deviations, and *t*-test for one minute of execution in "refuse to give" behaviors.

Group	n	Pretest M	Pretest SD	p	Posttest M	Posttest SD	p	Post-Pre M	Post-Pre SD	p
Experi	25	.47	.40		.46	.73		−.007	.93	
Cntrol	11	.64	.59		.40	.60		−.241	.94	
Exp-Ctrl				.403			.788			.501

Table 6. Difference of posttest-pretest means, standard deviations, and *t*-test for one minute of execution in "take away" behaviors.

Group	n	Pretest M	Pretest SD	p	Posttest M	Posttest SD	p	Post-Pre M	Post-Pre SD	p
Experi	25	1.70	1.64		1.02	1.67		−.68	2.09	
Cntrol	11	1.02	.91		.33	.35		−.68	1.04	
Exp-Ctrl				.119			.062			.994

game program had a positive effect because it increased behaviors which make group cooperation easier, something that did not happen with control teams.

Finally, results obtained in the "helping by indications" behavior, in which a subject helps another by verbal or non-verbal indications, show a significant increase in these behaviors in experimental teams. From posttest-pretest means differences found in these behaviors, we can see that experimental teams had a higher increase (M = .915) than control groups (M = .299). Differences pre-post between them were significant ($t(34) = 2.47, p < .05$). This demonstrates that the cooperative game program stimulated the "give help" behavior.

Further study was done to see how the program

helped to reduce negative cooperation behaviors. The "refuse to give" behavior was taken into account and registered every time a subject, spontaneously or after being asked, refuses to give a piece, or when after being dispossessed of a piece by any playmate he reacted immediately by getting the piece back, without allowing the other to see if it fitted in his/her square. "Taking away" behavior was also measured. It was included as a disturbing behavior because it seemed to a degree somewhat negative for cooperation, as in many occasions it would give free way to conflicts which meant a negative effect in the process of cooperation and help.

Using the same method, the teams means and the derived differences were measured for one minute of execution in pre-post phases. Results are indexed in Tables 5 and 6.

No significant differences between experimental and control groups were found in these behaviors. Therefore, it cannot be affirmed that the cooperative game program had a relevant reducing effect on these negative behaviors.

Discussion and Educational Implications

The assessment of the program suggests the effectiveness of this friendly-cooperative peer-helping game program in child socio-affective relations in school, as well as an increase in helping and cooperative behaviors between peers. The results showed that the intervention: (a) stimulated the blooming of new group leaders together with a greater number of behaviors that show acceptance among children within the group; (b) decreased partially the rejection of peers in school; (c) significantly reduced the execution time needed for a cooperative activity; and (d) increased positive behaviors, that is, behaviors that make cooperation easier, such as giving–taking, asking–receiving and helping behaviors.

All these positive changes are associated with the improvement in socio-affective relations and in group cooperation capacity. Nevertheless, the program hadn't effect on negative behaviors for cooperation such as refusing to give or taking away.

Findings in our study are consistent with a number of investigations (Deutsch, 1971; Elkonin, 1978/1980; Coll, 1984; Stevens & Slavin, 1991), which have suggested that play or intragroup cooperation have a significant role in child development. Results generated by the present study provide evidence that this psychoeducative interventional game program – which includes action, communication, and cooperative interaction between subjects and which highlights the idea of help and cooperation among peers by avoiding aggression – improves socialization and stimulates positive interactions within the groups.

The results we obtained suggest that a simple intervention of this kind can be very beneficial for children and teachers. In this program children have the chance to enjoy themselves together with their peers in a cooperative and friendly atmosphere, while they perform edifying activities in a relaxed environment. The intervention is very useful for teachers as well. They are more aware of the children's emotions and their interactions. This close attention helps to increase the teacher's knowledge about the different styles of personalities his/her students have. This allows the teacher to take part more adequately in the students' development processes.

We consider that the very nature of the games is the main reason for the obtained results. Since the principal components of these games are cooperation and help, they have stimulated communication, cohesion and confidence within the players. The program also has a very important metacognitive factor which is activated in the closing stage of each session. This closing stage gives the children a clear opportunity to think over and to talk about whatever has occurred during the session. The subsequent intragroup communication is induced by the wide range of questions asked by the teacher. The only object of these questions is to make children aware of their own interactions and "how" to cooperate.

It is important to mention that the results could have been influenced by an independent factor: the theoretical and methodological training of the teachers which took place during the group seminars. At the end of the investigation all teachers admitted that the analysis and continuous assessment had stimulated cognitive changes in their original conception of education, consequently changing their own behavior. This is why we suggest that teachers who want to conduct such an intervention should share with the other teachers their personal experiences in the classroom and discuss new interventional strategies for the difficult cases that may arise in each group during the program.

Most important, this investigation reveals new facts on the relation between cooperative games and child socialization. It also gives teachers a tool to promote socio-affective development and cooperation capacity, and contributes with an instrument to assess child intragroup cooperation.

Too often schools only consider academic learning, forgetting all the other factors that are involved in child development. This is why the findings in this study have implications for reforms designed to improve socio-affective development processes within the school.

The early learning of cooperation which has been stimulated with this program has significant repercussions on the cognitive and moral development of children as has already been indicated by Piaget's studies and confirmed by recent investigations of the Vygoskian approach.

These results not only offer a new educational guide-line, but also provide the teacher with a tool to promote social integration of problem children. As we have already said, this study is part of a wider investigation (Garaigordobil, 1992 a) which revealed "significant benefits for children who had shown apathy-withdrawal, anxiety-shyness and low self-concept behaviors in the pretest phase" (p. 581).

Regarding the manner in which these problem children have been socially integrated in the classroom, we can point out some useful techniques: (a) Social reinforcement or verbal appraisal of any situation where solidarity is observed; (b) Communication and reflection at the closing stage of each session. This is so that children can think about what it would be like to be in the rejected subject's shoes. They can verbalize their feelings about being socially excluded, and reflect on the benefits of cooperation versus competition; (c) Keeping a "diary" to record all the interactions problem children have. This data allows the teacher to analyze their behavior and interactions so as to design different strategies to encourage their integration. One example would be to let the rejected child join a group with a friendly, cohesive leader whose behavior is a model for the rest of the group. Another possibility is to give the rejected child a principal role at certain points. The teacher could even be his/her partner in some games so that he/she can be led into group interaction.

Finally, this experience has had implications for the teachers in their relationship with the students, as was stated by the teachers at the end of the investigation. In their opinion, this new way of teaching has helped them to take a more psychosocial perspective in education, and it has changed their original ideas about academic learning. They have also modified their interactional behavior with the children and have strengthened their capacity to observe the individual students, the entire group, as well as their own teaching.

Author's Address:
Maite Garaigordobil
Facultad de Psicología
Universidad del País Vasco
Avda. de Tolosa, 70
E-20009 San Sebastián
Spain

References

Anguera Argilaga, M.T. (1988). *La observación en la escuela* [Observation in the school]. Barcelona: Grao.

Anguera Argilaga, M.T. (1991). Proceso de categorización [Categorizing process]. In M.T. Anguera, J. Behar, A. Blanco, M. V. Carreras, V. Quera, C. Riba, & M. Sanchez (Eds.), *Metodología observacional en la investigación psicológica* [Observational methodology in psychological assessment] (115–167). Barcelona: PPV.

Arfouilloux, J.C. (1977). *L'Entretien avec L'Enfant* [Interviewing a child]. Toulouse: Edouard Privat.

Bar-Tal, D., Raviv, A., & Sharabany, R. (1982). Cognitive basis for development of altruistic behavior. In V.J. Derlega & J. Grzelak (Eds.), *Cooperation and helping behavior.* London: Academic Press.

Blazic, Ch. (1986). The impact of a cooperative games program on a fifth grade class: A field study. *Dissertation Abstracts International, 47*(3-A), 785.

Burns, S.M., & Brainerd, C.J. (1979). Effects of constructive and dramatic play on perspective taking in very young children. *Developmental Psychology, 15*, 512–521.

Bruner, J. (1986). Juego, pensamiento y lenguaje [Play, mind and language]. *Perspectivas, 16*(1), 79–85.

Coll, C. (1984). Estructura grupal, interacción entre alumnos y aprendizaje escolar [Group structure, interaction between students and academic learning. *Infancia y aprendizaje, 27 & 28*, 119–139.

Deutsch, M. (1971). Efectos de la cooperación y la competición sobre el proceso de grupo [Effects of cooperation and competition on the group processes]. In D. Cartwright & A. Zarder (Eds.), *Dinámica de grupo* [Group dynamics] (pp. 503–525). México: Trillas.

Eisenberg, N., & Mussen, P. (1977). *The roots of prosocial behavior in children.* Cambridge: Cambridge University Press.

Eisenberg, N., & Miller, P.A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 101*, 91–119.

Elkonin, D.B. (1980). *Psicología del juego* [Psychology of games]. Madrid: Pablo del Río. (Original work published 1978)

Fisher, E.P. (1992). The impact of play on development: A meta-analysis. *Play and Culture, 5*(2), 159–181.

Froming, W.J., Allen, L., & Jensen, R. (1985). Altruism, role-taking and self-awareness: The acquisition of norms governing altruistic behavior. *Child Development, 56*, 1223–1228.

Fuentes, M.J. (1990). Análisis de las variables afectivas que mediatizan la conducta prosocial de ayuda en adoles-

centes [Affective variables that predict helping behaviors in adolescence]. *Revista de Psicología Social,* 5(2-3), 237-248.

Fultz, J., Batson, C.D., Fortenbach, V., McCarthy, P., & Varney, L. (1986). Social evaluation and the empathy-altruism hypothesis. *Journal of Personality and Social Psychology, 50,* 761-769.

Garaigordobil, M. (1990). *Juego y desarrollo infantil* [Play and child development]. Madrid: Seco-Olea.

Garaigordobil, M. (1992 a). *Diseño y Evaluación de un programa lúdico de intervención psicoeducativa con niños de 6-7 años* [Design and assessment of a game program for a child psychoeducative intervention at ages between 6-7]. Ph.D. (Microfilming at present), Publishing Service of País Vasco University, Spain.

Garaigordobil, M. (1992 b). *Juego cooperativo y socialización en el aula* [Cooperative games and socialization in the school]. Madrid: Seco-Olea.

Garaigordobil, M. (1995). *Psicología para el desarrollo de la cooperación y de la creatividad* [Psychology to develop cooperation and creativity]. Bilbao: Descleé de Brouwer.

Garaigordobil, M., & Echebannia, A. (1995). Assessment of a peer-helping game program on children's development. *Journal of Research in Childhood Education, 10* (1), 63-69.

Garvey, C. (1977). *Play.* London: Open Books Publishing.

Gelb, R., & Jacobson, J.L. (1988). Popular and unpopular children's interactions during cooperative and competitive peer group activities. *Journal of Abnormal Child Psychology, 3*(16), 247-261.

Göncü, A. (1993). Development of intersubjectivity in social pretend play. *Human Development, 36*(4), 185-198.

Gordon, D.E. (1993). The inhibition of pretend play and its implications for development. *Human Development, 36,* 215-234.

Grineski, S.C. (1991). Effects of cooperative games on the prosocial behavior interactions of young children with and without impairments. *Dissertation Abstracts International, 51*(8-A), 2629.

Hoffman, M.L. (1983). Desarrollo moral y conducta [Moral development and behavior]. En M.R. Schaffer (Ed.), *El mundo social del niño* [Child's social environment]. Madrid: Aprendizaje Visor.

Iannotti, J.R. (1978). Effects of rol-taking experiences on role-taking, empathy, altruism and aggression. *Developmental Psychology, 14,* 119-124.

Imeroni, A. (1991). El juego como medio educativo [Games and education]. *Cuadernos de Psicomotricidad, Association Europeenne desécoles de formulation a la practique Psychomotrice, 0,* 7-14.

Isenberg, J., & Quisenberry, N. (1988). Play: A necessity for all children. *Childhood Education, 64*(3), 138-145.

Johnson, R.T., & Johnson, D.W. (1981). Building friendships between handicapped and nonhandicapped students: Effects of cooperative and individualistic instruction. *American Educational Research Journal, 18,* 415-423.

Johnson, D.W., & Johnson, R. T. (1986). Impact of classroom organization and instructional methods on the effectiveness of mainstreaming. In J. Meisel (Ed.), *Mainstreaming handicapped children: Outcomes, controver-*

sies and new directions (pp. 219-250). Hillsdale, NJ: Erlbaum.

Johnson, D.W., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). Effects of cooperative, competitive and individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin, 89,* 47-62.

Kamii, C., & Devries, R. (1988). *Juegos colectivos en la primera enseñanza* [Group games in early education]. Madrid: Aprendizaje Visor. (Original work published 1980)

Kohlberg, L. (1976). Moral stages and moralization: the cognitive developmental approach. In T. Lickona (Ed.), *Moral development and behavior: Theory, research and social issues.* New York: Holt, Rinehart and Winston.

Lanzetta, J.T., & Englis, B.G. (1989). Expectations of cooperation and competition and their effects on observers' vicarious emotional responses. *Journal of Personality and Social Psychology, 56,* 543-555.

Levy, A., Wolfgang, Ch., & Koorland, M. (1992). Sociodramatic play as a method for enhancing the language performance of kindergarten age students. *Early Childhood Research Quarterly, 7*(2), 245-262.

Marbach, E.S., & Yawkey, T.D. (1980). The effects of imaginative play actions on language development in five year old children. *Psychology in the Schools, 17,* 257-263.

Marshall, H., & Hahn, S. (1967). Experimental modifications of dramatic play. *Journal of Personality and Social Psychology, 5,* 119-122.

McCune-Nicolich, L. (1981). Towards symbolic functioning: structure of early pretend games and potential parallels with language. *Child Development, 52,* 85-797.

Mead, M. (1961). *Cooperation and competition among primitive peoples.* Boston: Beacon. (Original work published 1937)

Mender, J., Kerr, R., & Orlick, T. (1982). A cooperative games program for learning disabled children. *International Journal of Sports Psychology, 13*(4), 222-233.

Moreno, J.L. (1972). *Fundamentos de la sociometría* [Development of Sociometry]. Buenos Aires: Paidos. (Original work published 1934)

Morishita, M. (1990). The influence of perceived mother model attitudes on children's aggressive or prosocial behavior. *Japanese Journal of Psychology, 61*(2), 103-110.

Mujina, V. (1978). *Psicología de la edad preescolar* [Psychology in early education]. Madrid: Pablo del Rio. (Original work published 1975)

Newson, E., & Newson, J. (1982). *Toys and playthings.* London: Penguin Books. (Original work published 1979)

Oliveira, L. (1986). Niveles estratégicos de los juegos [Game strategies]. *Perspectivas, 16*(1), 69-78.

Orlick, T. (1978). *Juegos y deportes cooperativos* [The cooperative sports and games book]. Madrid: Popular.

Orlick, T. (1981). Positive socialization via cooperative games. *Developmental Psychology, 17*(4), 426-429.

Orlick, T. (1988). El juego cooperativo [Cooperative games]. *Cuadernos de Pedagogía, 163,* 84-87.

Ortega, R. (1986). Juego y pensamiento en los niños [Play

and child's thinking processes]. *Cuadernos de Pedagogía*, *133*, 33–35.

Pardos, M.L., Gómez, C., Miguel, A., & Bernad, M.C. (1988). Posibilidades educativas del juego dramático [Dramatic play and education]. *Revista Internacional de Formación de Profesorado*, *2*, 275–280.

Piaget, J. (1974). *El criterio moral en el niño* [Child's moral development]. Barcelona: Fontanela. (Original work published 1932)

Piaget, J. (1979). *La formación del símbolo en el niño* [The construction of symbolic representation in children]. México: Fondo de cultura económica. (Original work published 1945)

Piaget, J., & Inhelder, H. (1984). *La psicología del niño* [Child's psychology]. Madrid: Morata. (Original work published 1969)

Rosen, C. (1974). The effects of sociodramatic play on problem solving behavior among culturally disadvantaged preschool children. *Child Development*, *45*, 920–927.

Rué, J. (1989). El trabajo cooperativo por grupos [cooperative task in groups]. *Cuadernos de Pedagogía*, *170*, 18–21.

Saltz, E., Dixon, D., & Johnson, J. (1977). Training disadvantaged preschoolers on various fantasy activities: Effects on cognitive functioning and impulse control. *Child Development*, *48*, 367–380.

Sherif, M., Harvey, O.Y., White, B.Y., Hood, W.R., & Sherif, C.W. (1961). *Intergroup conflict and cooperation: The robbers cave experiment*. Norman, Oklahoma: University of Oklahoma.

Shores, R.E., Huster, P., & Strain, P.S. (1976). Effects of teacher presence and structured play on child-child interaction among handicapped preschool children. *Psychology in the Schools*, *13*, 171–175.

Silva, F., & López, C. (1983). Evaluación de las interacciones del sujeto con su ambiente [Assessment of people's interaction with their environment]. In R. Fernandez Ballesteros (Ed.), *Psicodiagnóstico* [Psychodiagnostic]. *Vol. 3*. (pp. 250–288). Madrid: UNED.

Slavin, R. (1980). Cooperative learning. *Review of Educational Research*, *50*(2), 315–342.

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

Slavin, R. (1990). *Cooperative learning: Theory, research and practice*. Englewood Cliffs, NJ: Prentice-Hall.

Smilansky, S. (1968). *The effect of sociodramatic play on disadvantaged preschool children*. New York: Wiley.

Smith, P.K., & Sydall, S. (1978). Play and nonplay tutoring in preschool children: Is it play or tutoring which matters?. *British Journal of Educational Psychology*, *48*, 315–325.

Sterling, A. (1990). Social behavior updated: A review of Eisenberg and Mussen's The roots of prosocial behavior in children. *Merrill-Palmer Quarterly*, *36*(4), 581–583.

Stevens, R.J., & Slavin, R.E. (1991). When cooperative learning improves the achievement of students with mild disabilities: A response to Tateyama – Sniezek. *Exceptional Children*, *57*(3), 276–280.

Vygotsky, L.S. (1982). El juego y su función en el desarrollo psíquico del niño [Play and its function in children's psychic development]. Spanish translation of Vygotski's lecture given at the Hertzsn State Institute of Education. Leningrado, 1933. In R. Grasa. *Cuadernos de Pedagogía*, *85*, 39–49.

Wilder, D.A., & Shapiro, P.N. (1989). Role of competition-induced anxiety in limiting the beneficial impact of positive behavior by an out-group member. *Journal of Personality and Social Psychology*, *56*(1), 60–69.

Winnicott, D. (1982). *Playing and reality*. London: Tavistock Publications. (Original work published 1971)