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Intervention in Creativity With Children Aged 10 and 11 Years: Impact of a Play Program on Verbal and Graphic–Figural Creativity

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ABSTRACT: This work presents the assessment results of a play program designed for stimulating creativity in children. The design used was quasiexperimental pretest intervention–posttest with control group. The sample used included 86 children aged 10 and 11 years, 54 experimental and 32 control, distributed in 4 groups. Before and after the program, 2 assessment methods were administered: 7 verbal and figural tasks from Torrance's Tests of Creative Thinking and direct judgment by experts who assessed a creative product. The program consisted of a weekly 2-hr intervention session throughout the school year. The program's activities were intended to stimulate verbal, graphic–figural, constructive, and dramatic creativity. Results of the analyses of variance suggest a positive effect of the intervention, as the experimental participants significantly increased their verbal creativity (originality) and graphic–figural creativity (resistance to premature closure, originality, elaboration, creative performance). The program produced a significantly greater change in the experimental participants who showed a low level of creativity before the intervention. The effects of the program were similar in boys and girls.

There is a fairly common belief that creativity can be developed through training. Various recent studies that have assessed the effects of programs for stimulating creativity confirm this belief (Antonietti, 2000; Baer, 1996; Caf, Kroflic, & Tancing, 1997; Curnow & Turner, 1992; Fleith, Renzulli, & Westberg, 2002; Komarik & Brutenicova, 2003; Kurtzberg & Reale, 1999; Parker, 1998; Saxon, Treffinger, Young, & Wittig, 2003). Consequently, many countries are increasingly placing a high priority on stimulating creative thinking at the school level.

On the basis of this thesis, the objectives of this work were as follows: (a) to design an intervention program based on creative play and aimed at children aged 10 to 12 years, (b) to administer it weekly throughout a school year, and (c) to assess its effects on verbal and graphic–figural creativity. The study forms part of a research line developed since the 1990s in which several intervention programs have been designed and assessed. These programs have been constructed on the basis of three parameters: play, cooperation, and creativity (Garaigordobil, 2003a). The work has two antecedents: a program for children aged 6 to 8 years (Garaigordobil, 1994; Garaigordobil & Echebarría, 1995; Garaigordobil, Maganto, & Etxeberría, 1996) and another for children aged 8 to 10 years (Garaigordobil, 1995, 1996, 1999, 2003b), whose assessment has highlighted the importance of play in children's development. It relates play, cooperative interaction, and creativity following the line of recent research that has linked creativity and cooperation (Baloche, 1994) and made suggestions for stimulating creative thinking such as training teachers, using coop-

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erative teams, avoiding routines in class, or providing opportunities for developing creative capacities (Mevarech & Kramarski, 1993; Strom & Strom, 2002).

Many researchers have drawn attention to the close association between play and creativity. From diverse theoretical perspectives it is accepted that play is the first creative activity of the child and that imagination originates and develops in play. Creative play in its different forms is of great importance in development because it stimulates curiosity, flexibility, and improvisation and promotes problem-solving behavior that leads to learning, imitation, and adaptation to change. Research that has analyzed the contributions of play to child development has stressed the crucial role of play in human development. Many studies carried out within different epistemological frameworks have confirmed that play stimulates creativity (Baggerly, 1999; Dansky, 1980a, 1980b; Howard, Taylor, & Sutton, 2002; Kalmar & Kalmar, 1987; Mellou, 1995; Price-Coffee, 1995; Russ, 1996; Udwin, 1983; Yawkey, 1986), identifying pretend play as a predictor of divergent thinking (Russ, 2003b; Russ, Robins, & Christiano, 1999).

This study worked from the interactionist theoretical framework of creativity development, which emphasizes the relevant role of social and affective factors in the development of play and creativity. The play program designed and assessed in this study is based on the theoretical contributions of Vygotsky (1933/1967, 1932/1978, 1930/1990) on the development of creativity and of higher psychological processes. In 1930, Vygotsky published the work, "Imagination and Creativity in Childhood," in which he developed his view on the creative consciousness process, the relation between emotion and thought, and the role of imagination. A relevant premise in Vygotsky's (1933/1967) theory is that imagination develops out of children's play. He stated that the child's play activity is not simply a recollection of past experience, but a creative reworking that combines impressions and constructs from them new realities addressing the needs of the child. Through play, children develop combinatory imagination, and combinatory imagination contributes to artistic and scientific creativity.

According to Vygotsky (1930/1990), there is no opposition between imagination and reality. Imagination is a form of consciousness—an ability to combine—that is connected with reality in more ways than one. Imagination is based on elements taken from reality, which means that "the creative activity is directly dependent on the individual's experiences, and the extent and degree of variation of these experiences" (Vygotsky, 1930/1990, p. 89). Emotion and imagination are closely related. Emotions result in an imaginary process, and vice versa. Emotions are always real and true; emotions are linked to reality (Lindqvist, 2003).

For Vygotsky (1933/1967), play is always a social, symbolic activity. It typically involves more than a single child; and the themes, stories, or roles enacted by play episodes express children's understanding and appropriation of the sociocultural materials of their society. To understand Vygotsky's emphasis on the essentially social nature of play, we need to briefly consider the wider framework of his psychological theory. In explaining the creation and development of higher psychological functions, Vygotsky (1932/1978) attributes a central role to culture and to its transmission through social interaction and communication. In characterizing play, Vygotsky (1933/1967) stressed the presence of two essential and interrelated components: (a) an imaginary situation, and (b) rules implicit in the imaginary situation. An imaginary situation is a defining characteristic, not only of pretend play, but also of games with rules; although in the latter case, the imaginary situation may be present in concealed form (Nicolopoulou, 1993).

Vygotsky (1932/1978, 1933/1967) emphasized the social formation of mind and of play activity. He is conscious of the emotional component in play and its contribution to play's cognitive value. For Vygotsky (1933/1967), play is important in the development of major cognitive and affective processes involved in creativity. Affect emerges as an important variable in the play–creativity link. (For extensive reviews of Vygotsky's theory, see Ayman-Nolley, 1992; Lindqvist, 2003; Nicolopoulou, 1993; F. Smolucha, 1992; L. Smolucha & Smolucha, 1992.)

The general hypothesis of this study was that the cooperative–creative play program will have a significantly positive effect on creativity. Specifically, four hypotheses were proposed:

H1. The program will increase verbal creativity in three indicators: fluency, or the ability to produce a large number of ideas; flexibility, or the aptitude for changing from one approach to another or from one line of thinking to another; and originality, or the ca-

pacity for bringing new ideas or solutions that are far from obvious, common, or established. This verbal creativity was assessed by means of four creative tasks from the Torrance Tests of Creative Thinking (TTCT; Torrance, 1974/1990; asking, guessing causes, guessing consequences, product improvement).

H2. The program will develop graphic–figural creativity in six indicators: capacity for abstractness of title of the drawing made, resistance to premature closure, originality or aptitude for drawing new or unusual ideas, elaboration (participant's aptitude for developing, extending, or embellishing ideas), fluency, and graphic creative performance (interaction between execution time of a product and its originality). Assessment was through four tasks: three from the TTCT (doing a drawing from a black blot, completing drawings, doing drawings from given forms) and one consisting in producing a painting on any theme whose originality is assessed by expert judges (artists).

H3. The program will produce a significantly greater improvement in the experimental participants who, before the start of the play program, presented low levels of creativity.

H4. Boys and girls will have similar levels of change due to the effects of the program.

This research is unique in its testing of: (a) the effect of the program on graphic creativity assessed through two methodologies: on the one hand, three tasks from the TTCT psychometric test and, on the other, the direct judgments of two artists on the originality of the children's work with defined criteria; and (b) the effect of low-structured cooperative play that facilitates the emergence of creativity.

Method

Participants

The sample was made up of 86 participants aged 10 to 11 years in four groups from two schools in the Basque Country of northern Spain. From the complete sample, 54 participants were assigned at random to the experimental condition (2 groups), whereas 32 were assigned to the control condition (2 groups). Thirty-four of the participants were boys, and the other 52 were girls. Taking into account all the schools in the area, two were chosen at random. The sampling unit was school class. Each class and the children in it had the same probability of being assigned to the experimental or control condition. The control and experimental groups were equivalent in terms of age, gender, academic aptitude, achievement, and sociocultural level. The participants had an average socioeconomic and educational background: 39% of parents had a university degree, 35% had secondary education, and 26% had elementary education. After selecting the schools at random, a meeting was held with the head teachers and the teachers of the classes involved, who decided to participate in the study after the presentation of the project. Parents had already been informed about the study at a meeting and had given their consent. There were no refusals to participate, nor attrition of the sample.

Design and Procedure

The study employed a quasiexperimental methodology; specifically, a pretest intervention–posttest repeated-measures design with a control group. In the pretest phase, during the early weeks of the school year, two evaluation instruments were administered to measure the dependent variables on which it was hypothesized the program would have positive effects. The instruments were applied to the experimental and control participants by the schools' psychologists with the help of psychology students, whose collaboration formed part of their training as researchers within their doctoral program. These students had been trained in seminars prior to the administration of the tests, thus making for greater homogeneity in the collection of data.

Subsequently, the experimental participants took part in the creativity program, which consisted of a weekly 2-hr play session throughout the academic year. The session was structured with a sequence of two or three recreational activities and their subsequent debates. The play sessions were carried out in the same place—a large, empty room—on the same day and at the same time each week. The intervention was directed by the class teacher corresponding to each group, with the help of an observer. Control participants carried out activities (plastic arts) from the normal school curriculum, thus receiving another type of instruction and the same level of attention, to avoid the Hawthorne effect. In the posttest phase, during the final months of the school year, the same evaluation instruments as in the pretest were applied to measure the

change in the dependent variables that were the object of the study.

The research team for carrying out the study was made up of the two teachers who implemented the program in the two experimental classrooms, together with the school psychologists and two psychology students who carried out the pretest–posttest evaluation and the filming and observation of the intervention sessions. Training of the team took place fortnightly throughout the academic year. This training focused both on the program itself and on its evaluation. The training seminars included a variety of activities such as discussion of the program's theoretical concepts, active experience of some of the intervention activities, analysis of intervention sessions filmed on video, and development of specific intervention strategies in view of the difficulties observed. Furthermore, these seminars had the purpose of checking experimenters' compliance with the program (i.e., how far they followed the standard instructions for its application). Scoring of tests was blind, without knowledge of either the condition or the hypotheses, and was carried out by a team of psychology students trained for this purpose.

Materials

To assess the program's effects in the pretest and posttest phases, the TTCT (Torrance, 1974/1990) were administered for measuring verbal and graphic–figural creativity. Furthermore, graphic–figural originality was assessed by means of the direct judgments of experts (artists) who assessed a creative product; specifically, a painting on a theme of the child's choice (open-theme painting). The reliability of the data is reported later.

TTCT

Verbal forms. This uses various word-based exercises for assessing three indicators of verbal creativity: fluency or ability for producing ideas; flexibility or aptitude for changing from one line of thinking to another; and originality or capacity for bringing in new ideas or solutions that are far from obvious, common, or established. Four activities were administered. The first three were based on a drawing and gave the child the opportunity to ask questions about the drawing to find out more about it and to guess possible causes and consequences of what was happening in it. The time limit per activity was 5 min. The fourth activity was a task for improving a product in which the participant was asked to suggest ideas on changes that could be made to a toy to make it more fun. The time limit was 10 min. In the verbal tasks, three aspects were assessed: fluency (1 point awarded for each idea presented), flexibility (1 point for each category), and originality (scores were determined by statistical frequency of the idea using a measure based on the responses of 139 participants from the same age group: 0 points if the idea was mentioned by more than 3 participants, 1 point if it was mentioned by 3 participants, 2 points if it was mentioned by 2 participants, and 3 points if it was mentioned by just 1 participant).

Graphic–figural forms. The figural battery is made up of three activities. In the first, "construction of a drawing," the participant is presented with a black blot and asked to do a drawing that includes it and give the drawing a title. In the second, "drawings to complete," participants are given incomplete figures that they must complete. The third, "lines/circles," presents parallel lines or circles with which to make drawings. The time limit for carrying out each task is 10 min. These three activities allow the assessment of various aspects of creative thinking, five of which were measured in this study: fluency (Activities 2 and 3), defined as the participant's capacity to produce ideas (1 point being awarded for each idea presented); originality (Activities 1 and 3) assessed according to the statistical frequency of the idea using the scoring criteria described earlier; abstractness of the title (Activity 1) related to the participant's capacity for summarizing and organizing thought processes (0, 1, 2, or 3 points being awarded according to the degree of abstractness of the title given); resistance to premature closure (Activity 2; 0, 1, 2, or 3 points being awarded according to the type of closure given to the figure; the quicker and more directly the closure, the lower the score obtained); and elaboration (Activities 1 and 2), defined as a participant's aptitude for developing, extending, or embellishing ideas (0, 1, 2, or 3 points being awarded according to the number of additional details drawn beyond what is strictly necessary for expressing the basic idea).

Numerous psychometric studies of the TTCT presented in the test manual confirm its validity and reliability (Torrance 1972a, 1972b, 1981, 1974/1990). Test–retest reliability studies for these tests have

shown indexes of over .80. With regard to the validity of the battery, a considerable number of studies show that children with the aptitudes assessed by the TTCT are more likely to behave in a creative way. Furthermore, several longitudinal studies have demonstrated the correlation between the TTCT and different criteria of creative behavior. Several studies that have employed teachers as assessors of the battery indicate acceptable reliability coefficients for tests of this type (r = .76).

Creation of a Painting (Open Theme)

This assessment instrument explores graphic–figural creativity through the creation of a painting on a theme of the participant's choice. Each participant receives a sheet of paper, a pencil, an eraser, and a box of paints; the participant is asked to do a painting, with no time limit. Assessment in this creative product was made by means of direct judgment by two experts (artists), who independently assessed the creativity of the products using an agreed-on criterion of creativity. The criterion or definition of creativity was based on the following elements:

> Novelty; insightful associations, sense of humor; fantasy capable of transcending reality: breaking away from reality; unusual perspective: talent for seeing things in different ways; transformation: capacity for destructuring reality and restructuring it in different and original forms; expressive strength: expressive impact through color, movement, the action or story represented, or type of stroke.

In drawing up this definition of creativity, several definitions from different theoretical models were borne in mind (Amabile, 1983; Barron, 1965; Csikszentmihalyi, 1996; Guilford, 1950; Sternberg & Lubart, 1991). The two judges each gave the paintings an originality score on a 5-point scale ranging from 1 (*not very original*) to 5 (*very original*). Time taken to complete the painting was also recorded. The interaction (Time × Originality) gave the indicator of graphic creative performance. Interjudge reliability was measured by analyzing their level of agreement. With the scores of the two judges in the pretest, we obtained some coefficients confirming an acceptable degree of interjudge agreement (Pearson r = .66; contingency coefficient = .62). Furthermore, with the aim of exploring the validity of this test, relations between scores obtained in the painting and other creativity measures were studied. Pearson coefficients between the scores awarded to the paintings by one of the judges and the TTCT results confirmed moderate significant correlations between originality as assessed by the expert and scores on diverse tasks of verbal and graphic creativity. Reliability studies carried out with a sample of 86 participants aged 10 to 11 confirmed its internal consistency (Cronbach's α = .80).

Intervention Program

The program was constructed on the basis of three parameters: play, cooperation, and creativity. This work is consistent with studies carried out within different epistemological frameworks that have confirmed that play stimulates creativity (Baggerly, 1999; Dansky, 1980a, 1980b; Howard et al., 2002; Kalmar & Kalmar, 1987; Mellou, 1995; Price-Coffee, 1995; Udwin, 1983; Yawkey, 1986), as well as with studies that have linked cooperation and creativity (Baloche, 1994; Mevarech & Kramarski, 1993; Strom & Strom, 2002). The program is based on the conclusions stemming from three research lines: (a) studies on children's play that have confirmed its relevant role in child development, (b) works that have demonstrated the benefits of cooperation for sociopersonal development, and (c) research that has confirmed the possibility of developing creativity through programs of intervention (Garaigordobil, 2003a).

The intervention based on cooperative and creative games consisted of a weekly 2-hr session involving two or three recreational activities and their corresponding debates. These sessions were carried out at the same time each week and in the same physical space: an activity room or gym. The sessions were led by the group's class teacher and always followed the same procedure. First of all, with the group members sitting on the floor in a circle, the aims and instructions of the activity were presented. Next, the group carried out the activity; normally, in small teams. At the end of the activity, the group members once again sat down in a circle, the teams presented their conclusions, and a discussion or debate was opened about the activity. This debate phase was a time for reflection and dialogue (guided by the adult) in which the results of the activity performed by the group were analyzed. Suc-

cessively, and following this scheme, two or three activities took place in each intervention session. The session concluded with a brief closing phase. Furthermore, in the first session, there was an introduction to the program explaining what was going to take place during the coming school year; in the final session, there was a debate in which the members of the group gave their views on the experience.

The activities of the intervention program (Garaigordobil, 2004) have two main objectives: in the first place, to develop creativity in different domains such as verbal, graphic–figural, constructive, and dramatic creativity; second, the program promotes socioemotional development stimulating (a) communication processes within the group (listening, dialogue, negotiating, making decisions by consensus, etc.); (b) prosocial interactions (helping, cooperating, sharing, consoling, etc.); (c) the expression of emotions through words, drawings, or dramatizations; and (d) improvement of self-concept.

The games included in the program stimulate communication, cohesion, confidence, and the development of creativity; underlying all of them is the idea of acceptance, cooperation, and sharing while playing and inventing together. The games constituting this program have five structural characteristics: (a) *participation,* because in these games all the members of the group participate, nobody is ever eliminated, and there are no winners or losers. The objective consists of reaching group goals for which each participant has a necessary role in the game; (b) *communication,* because all of the games in the program structure intragroup communication processes that involve listening, dialogue, decision making, negotiation, and so on; (c) *cooperation,* because the games in the program stimulate the players to help one another to contribute to a common aim or a group goal; (d) *fiction and creation,* because the games involve representation of reality—"pretending" that we are lions, trees, tables, and so on—as well as the combination of stimuli to create something new; and (e) *fun,* because with these games the aim is for the group members to enjoy interacting in a positive, constructive, and creative way with their colleagues. The activities of the program are distributed in four modules or types of games: verbal creativity, dramatic creativity, graphic–figurative creativity, and plastic-constructive creativity games. Table 1 offers a description of some games in the program and identifies the areas of creativity stimulated.

Results

Effects of the Program on Creativity

With the aim of assessing the change in the variables studied, the means and standard deviations were calculated for each variable in the experimental and control participants and in the pretest and posttest phases, as well as the pretest–posttest difference with the raw scores obtained in the variables measured before and after the intervention. Likewise, analyses of variance (ANOVAs) and multivariate analyses of variance (MANOVAs) were carried out with the pretest data, and analyses of covariance (ANCOVAs) and multivariate analyses of covariance (MANCOVAs) of the posttest–pretest differences using the pretest scores as covariates. The results obtained are presented in Tables 2 and 3.

Changes in Verbal Creativity

To measure the effect of the program on verbal creativity, the changes in the scores obtained in the four tasks of the TTCT verbal battery were analyzed. Table 2 shows the results in each of the creativity tasks (T1 = asking, T2 = guessing causes, T3 = guessing consequences, T4 = product improvement) and the overall results; that is, for total verbal creativity (TTCT verbal total). The results of the pretest–posttest MANCOVA for total verbal creativity, $F(1, 84) = 9.13$, $p = .000$, indicated significant differences between experimentals and controls with a considerable effect size ($\eta^2 = .258$, $r = .50$), suggesting a positive impact of the program on verbal creativity. As can be seen in Table 2, the pretest ANOVAs for the total of creativity tasks indicated that before the intervention there were no significant differences between experimentals and controls in any of the three indicators assessed: that is, in fluency of ideas, $F(1, 84) = 2.09$, $p = .151$; in originality of ideas, $F(1, 84) = 1.78$, $p = .185$; or in flexibility, $F(1, 84) = .01$, $p = .891$. Nevertheless, in originality, the posttest ANOVA, $F(1, 84) = 8.28$, $p = .005$; the pretest–posttest ANOVA, $F(1, 84) = 12.56$, $p = .001$; and the pretest–posttest ANCOVA, $F(1, 84) = 10.31$, $p = .002$, indicated significant differences between the two conditions. In originality, the experimentals improved significantly more ($M = 28.20$) than the controls ($M = 13.09$), suggesting that the play program increased capacity for verbal originality. In fluency and in flexibility, the experimentals improved more than the controls; how-

Table 1. *Description of the Games in the Program and of the Area of Creativity They Stimulate*

Name	Description of Game	Creative Area
Transformation of Animals	Players sit on the floor in a circle. Each player receives a sheet of paper and pencil, divides the sheet in half by drawing a line across the centre and draws an animal in the upper half. When the player has finished the drawing, he or she passes it to the player on the right and receives a sheet from the player on the left. Now the player must draw, in the lower half of the sheet, another animal, but incorporating a part of the body from the animal drawn in the upper half. Thus, a transformation of the animal is achieved, since, using a body part of the previous animal, a new animal is created. This transformation is then described at the bottom of the sheet. For example: the first player draws an elephant, and his or her colleague draws a butterfly, taking as wings the ears of the elephant. When the drawing is finished, the second player describes in one phrase the transformation made—for example: "The elephant is turned into a butterfly." Finally, there is an exhibition of the drawings.	Graphic–figural creativity: flexibility, originality, elaboration
Adverts	The game consists in inventing advertisements for a product or service chosen by the members of each team, the group being divided into teams of five players. The product or service can be something that exists or can be invented, created from the imagination of the participants. In the first phase, possible ideas are put forward about the product or service that it will be attempted to sell though the ad. Subsequently, the ideas are assessed and the most interesting (by consensus) selected. Once the product has been chosen, an advert must be structured with it indicating its advantages, characteristics, or whatever is thought suitable. In a second phase, each team acts out the ad. For the acting out, players may select materials from the drama materials box for dressing up or constructing objects necessary for the representation.	Multidimensional creativity (dramatic, verbal, graphic–figural, plastic-constructive): fluency, originality, expressiveness, fantasy
Printing Objects	In small teams, players must compose, in a cooperative way, a mural on a large sheet of paper. Team members are provided with finger paints of different colors and various objects (cardboard rolls, wooden or plastic sticks, blocks of wood of different shapes and sizes, pieces of string, small cardboard boxes such as matchboxes, old diskettes, etc.). They select objects one at a time, impregnating one of its faces with paint and printing its form on the mural, which gradually becomes made up of the imprints of different objects in several colors. Finally, there is an exhibition of the murals.	Graphic–figural creativity: originality, elaboration
New Names for Familiar Objects	Each team of four players receives two pieces of paper on each of which is written the name of a familiar object, a blank sheet of paper, and a pen. The game consists in inventing names for that object. One possibility is to give new names related to specific functions of the object. For example, a spoon (soup-eater, puree-launcher), a hammer (nail-driver, wallbreaker), the sun (body-heater, lightball). At the end, the whole group assembles and the secretary of each team reads the list of new names. The rest of the group must guess the object that the team has renamed.	Verbal creativity: fluency, flexibility, originality
Funny Drawings	The group is divided into pairs, each of which receives a large sheet of paper and a box of paints. First, each pair decide which object they will draw before dividing the sheet in two (either vertically or horizontally), and which half will be drawn by each one (right–left or top–bottom). Each does his or her part of the drawing without the other one seeing it. When they have both finished, the sheets are stuck together with adhesive tape and there is an exhibition of the resulting funny drawings.	Graphic–figural creativity: originality
Incredible Telephone Conversations	The group is divided into pairs, and each pair takes from a bag a piece of paper bearing the names of an "imaginary couple"—for example, paper and pen, a computer and a typewriter, the beach and the snow, television and a book, and so on. The game consists in creating an amusing telephone conversation between the two. Each pair must write the conversation themselves, avoiding mention of the characters involved, and making their responses coherent with their characteristics. When they have done so, each pair acts out their conversation and the other group members must guess who or what they are. An example of a conversation between a duck and a cow: "Hi, how are you?" "Wet, but happy, because it's sunny. And you?" "Right now I'm eating grass and enjoying the nice sunny day." "It's been a while since we last met here on the farm." "How's your husband, old Big Horns?" "Fine. As you know, he's strong and brave. He's grazing, too." "I like your feathers. When are you going to take me flying?" "I couldn't carry you, and I don't know how to fly anyway."	Verbal creativity: flexibility, originality

Table 2. *Means, Standard Deviations, and Analyses of Variance and Covariance in Experimental and Control Groups for Verbal Creativity*

	Experimental Group (n = 54)						Control Group (n = 32)						Experimental–Control (n = 86)			
	Pretest		Posttest		Pretest–Posttest		Pretest		Posttest		Pretest–Posttest		ANOVA $F(1, 84)$		ANCOVA $F(1, 84)$	
Task (T)	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Pretest	Post-test	Pre–Posttest	Pre–Posttest
T1: Asking																
Fluency	4.19	2.31	7.57	3.51	3.39	3.55	5.50	2.14	8.59	3.29	3.09	2.99	6.87*	1.77	0.15	0.20
Originality*	3.44	4.44	12.22	6.90	8.78	7.46	2.94	3.71	9.09	6.78	6.16	6.57	0.29	4.18*	2.70	4.57*
Flexibility	2.83	1.31	4.54	1.61	1.70	1.51	2.81	1.38	4.91	1.69	2.09	1.92	0.00	1.01	1.08	0.00
T2: Causes																
Fluency*	3.76	2.10	5.65	3.87	1.89	4.19	3.72	2.28	4.00	2.34	0.28	3.38	0.00	4.75*	3.39^{+}	4.62*
Originality	1.48	2.20	5.70	5.34	4.22	5.70	2.88	2.61	4.22	4.22	1.34	5.64	7.0**	1.80	5.17*	1.12
Flexibility*	2.48	1.27	3.30	1.41	0.81	1.68	2.38	1.43	2.84	1.08	0.47	1.90	0.12	2.44	0.77	4.63*
T3: Consequences																
Fluency	4.54	2.78	7.00	4.09	2.46	4.06	4.25	3.18	7.38	4.79	3.13	4.90	0.19	0.14	0.45	0.67
Originality*	2.54	3.27	8.69	7.24	6.15	7.31	2.59	3.26	5.00	4.53	2.41	4.65	0.00	6.70*	6.74*	5.08*
Flexibility	3.19	1.60	4.06	1.69	0.87	2.06	2.69	1.60	3.81	1.89	1.12	2.17	1.94	0.38	0.29	0.20
T4: Improvement																
Fluency	8.24	4.18	14.35	8.40	6.11	8.71	10.19	4.24	14.41	6.96	4.22	6.89	4.30*	0.00	1.09	0.87
Originality	4.26	3.75	13.31	9.31	9.06	9.90	6.19	5.85	9.38	7.46	3.19	7.14	3.47^{+}	4.14*	8.57**	6.11*
Flexibility^{+}	4.89	2.06	6.94	2.88	2.06	3.04	5.38	1.90	6.31	2.07	0.94	2.58	1.18	1.17	3.03^{+}	1.67
TTCT Verbal Total																
Fluency	20.72	9.21	34.57	16.38	13.85	16.35	23.66	8.86	34.38	14.08	10.72	13.37	2.09	0.00	0.84	0.30
Originality***	11.72	9.91	39.93	21.02	28.20	21.74	14.59	9.11	27.69	15.15	13.09	13.47	1.78	8.28**	12.56***	10.31***
Flexibility	13.39	4.68	18.83	5.73	5.44	5.67	13.25	4.20	17.88	4.79	4.62	5.25	0.01	0.63	0.44	1.56

Note. TTCT = Torrance Tests of Creative Thinking.
$^{+}$ $p < .09$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 3. *Means, Standard Deviations, Analyses of Variance and Covariance in Experimental and Control Groups for Graphic–Figural Creativity*

	Experimental Group ($N = 54$)						Control Group ($N = 32$)						Experimental–Control ($N = 86$)			
	Pretest		Posttest		Pretest–Posttest		Pretest		Posttest		Pretest–Posttest		ANOVA $F(1, 84)$		ANCOVA $F(1, 84)$	
Task (T)	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Pretest	Posttest	Pre–Posttest	Pre–Posttest
T1: Construction																
Abstractness Title	0.91	0.73	1.28	0.88	0.37	1.15	1.50	0.80	1.41	0.67	–0.09	1.00	12.21***	0.51	3.58^{+}	0.16
Originality	1.59	1.30	1.76	1.33	0.17	1.71	1.44	1.24	1.81	1.26	0.38	1.43	0.29	0.03	0.33	0.27
Elaboration	1.19	0.65	1.35	0.59	0.16	0.72	1.78	0.79	1.47	0.88	–0.31	1.03	14.40***	0.54	6.41*	0.01
T2: Completation																
Fluency	8.52	1.71	9.83	0.57	1.31	1.66	8.25	1.95	9.66	0.94	1.41	1.76	0.44	1.18	0.05	0.37
Resistance Closure***	12.96	3.58	16.33	2.45	3.37	3.94	13.72	3.27	12.94	2.71	–0.78	3.90	0.95	35.65***	22.44***	42.25***
Elaboration***	3.87	2.40	12.31	4.87	8.44	4.54	5.72	3.39	9.41	4.21	3.69	4.90	8.70**	7.90**	20.77***	15.62***
T3: Lines																
Fluency	14.20	6.51	15.69	6.29	1.48	6.02	11.97	3.79	15.78	5.48	3.81	4.82	3.13^{+}	0.00	3.47^{+}	1.28
Originality *	7.04	6.88	11.13	6.75	4.09	7.47	6.06	3.62	7.72	5.36	1.66	5.63	0.55	5.93*	2.54	3.88*
TTCT. Graphic Total																
Abstractness Title	0.91	0.73	1.28	0.88	0.37	1.15	1.50	0.80	1.41	0.67	–0.09	1.00	12.21***	0.51	3.58^{+}	0.00
Resistance Closure***	12.96	3.58	16.33	2.45	3.37	3.94	13.72	3.27	12.94	2.71	–0.78	3.90	0.95	35.65***	22.44***	39.71***
Originality*	8.63	6.89	12.89	6.69	4.26	7.41	7.50	3.57	9.53	5.57	2.03	5.53	0.74	5.70*	2.17	5.45*
Elaboration***	5.06	2.62	13.67	5.13	8.61	4.62	7.50	3.50	10.87	4.54	3.38	4.95	13.54***	6.46*	24.50***	13.22***
Fluency	22.87	7.40	25.52	6.47	2.65	6.63	20.22	4.90	25.44	5.78	5.22	5.05	3.25^{+}	0.00	3.57^{+}	0.16
Creativity Picture																
Time***	14.56	3.34	12.54	3.41	–2.02	3.94	14.41	5.40	17.94	5.97	3.53	5.58	0.02	28.63***	29.12***	36.23 ***
Originality																
Judge 1***	2.20	1.11	3.09	1.14	0.89	1.46	2.38	1.31	2.22	1.31	–0.16	1.55	0.41	10.56**	9.83**	11.88 ***
Judge 2*	2.54	1.28	2.98	1.12	0.44	1.28	2.53	1.32	2.38	1.21	–0.16	1.71	0.00	5.51*	3.43^{+}	5.97 *

Note. TTCT = Torrance Tests of Creative Thinking.
$^{+}p < .09$. *$p < .05$. **$p < .01$. ***$p < .001$.

ever, these differences were not statistically significant. Therefore, the program stimulated verbal creativity, promoting an increase in originality; that is, the capacity for contributing statistically novel and uncommon ideas. This increase was evident in verbal tasks such as formulating questions about a situation, guessing the consequences of that situation, and improving a toy.

Changes in Graphic–Figural Creativity in the TTCT

To measure the effect of the program on graphic–figural creativity, changes in the scores obtained in the three figural tasks of the TTCT were analyzed (see Table 3). The pretest–posttest MANCOVA, $F(1, 84) = 9.83$, $p = .000$, confirmed significant differences between experimentals and controls, with a considerably large effect size ($\eta^2 = .396$, $r = .62$), suggesting a strong impact of the play program on graphic–figural creativity. As can be seen in Table 3, the pretest–posttest ANCOVAs in resistance to premature closure, $F(1, 84) = 39.71$, $p = .000$; in originality, $F(1, 84) = 5.45$, $p = .022$; and in elaboration, $F(1, 84) = 13.22$, $p = .000$, indicated significant differences between the two conditions, suggesting that experimentals improved significantly more as a result of the play program in these three indicators of graphic–figural creativity. In resistance to premature closure, the experimentals showed a greater increase ($M = 3.37$) than the controls, who even showed a slight decrease ($M = –.78$); in originality, there was also more improvement in experimentals ($M = 4.26$) than in controls ($M = 2.03$); as in elaboration in which the experimentals improved much more ($M = 8.61$) than the controls ($M = 3.38$). These results suggested that the program had a positive effect on graphic–figural creativity, with increases in indicators such as (a) resistance to premature closure of figures; (b) originality, or aptitude for presenting novel, uncommon ideas; for bringing ideas or solutions that are far from obvious, common, or established; and (c) elaboration, or the aptitude for developing, extending, or embellishing ideas with details.

Changes in Graphic–Figural Creativity in the Painting

To ratify the effect of the program on graphic–figural creativity, we analyzed the changes in scores obtained in the assessment of a creative product (painting) by two expert judges (artists). The pretest–posttest MANCOVA, $F(1, 84) = 16.41$, $p = .000$, showed significant differences between experimentals and controls, with a considerably large effect size ($\eta^2 = .384$, $r = .61$) confirming the strong impact of the program on graphic–figural creativity. As can be seen in Table 3, the pretest ANOVAs indicated that before the intervention there were no significant differences between experimentals and controls. However, the pretest–posttest ANCOVAs for execution time, $F(1, 84) = 36.23$, $p = .000$; for originality assessed by Judge 1, $F(1, 84) = 11.88$, $p = .001$; and for originality assessed by Judge 2, $F(1, 84) = 5.97$, $p = .017$, indicated significant differences between the two conditions, suggesting that the experimental participants improved their creative performance more. Regarding execution time, experimentals showed a decrease ($M = –2.02$), whereas controls showed an increase ($M = 3.53$). In originality of the painting, experimentals increased in the opinion of both Judge 1 ($M = .89$) and Judge 2 ($M = .44$), whereas controls decreased a little according to both judges ($M = –.16$). These data indicated an increase in the creativity assessed through direct judgment by experts, ratifying the results of the TTCT. The results confirmed that the cooperative–creative play program promoted an improvement in graphic–figural creative performance because it led to a decrease in the time necessary for producing a creative product, increasing its originality defined in relation to:

> Novelty; insightful associations, sense of humor; fantasy capable of transcending reality: breaking away from reality; unusual perspective: talent for seeing things in different ways; transformation: capacity for destructuring reality and restructuring it in different and original forms; expressive strength: expressive impact through color, movement, the action or story represented, or type of stroke.

Effects of the Program on Participants With Low Levels of Creativity

To assess whether the program was especially effective for participants who in the pretest phase, before the beginning of the intervention, showed low levels in creativity, the experimental participants were classified in three profiles or categories according to their

pretest scores. Profile 1 (P1) included participants that obtained raw scores lower than 30%, Profile 2 (P2) scores corresponded to percentiles between 30 and 70, and Profile 3 (P3) scores were those higher than 70%. Subsequently, with the aim of checking whether the program had a significant effect on experimental participants who, *a priori,* had different levels of creativity, ANOVAs were carried out on the profiles in the pretest phase and on the pretest–posttest differences, in addition to Tukey's *post hoc* multiple comparison analyses (see Table 4).

Changes in Participants With Low Levels of Verbal Creativity

In flexibility, the ANOVA showed the pretest–posttest difference of means to be significant, $F(2, 51) = 4.17$, $p = .021$. The Tukey test confirmed significant differences ($p < .05$) of P1 ($M = 8.80$) in relation to P2 ($M = 4.48$) and to P3 ($M = 3.69$), although no differences were found between P2 and P3. Therefore, the participants with low levels of flexibility in verbal creativity tasks were those that improved most through the program. However, in fluency and verbal originality, the change in the different profiles was similar.

Changes in Participants With Low Levels of Graphic Creativity in the TTCT

In abstractness of the title, the ANOVA results indicated that the pretest–posttest difference of means between profiles was significant, $F(2, 51) = 7.23$, $p = .002$. The Tukey test indicated significant differences ($p < .05$) of P1 ($M = .59$) in relation to P2 ($M = –.67$) and to P3 ($M = –1.50$), although there were no differences between P2 and P3. These results indicated that the P1 participants (i.e., those who in the pretest showed a lower level in abstractness) were those that showed a significantly greater increase in their capacity for giving an abstract title to a drawing. In resistance to premature closure, the pretest–posttest ANOVA showed significant differences between profiles, $F(2, 51) = 30.39$, $p = .002$. The Tukey test indicated significant differences ($p < .001$) for P1 ($M = 8.07$) in relation to P2 ($M = 2.33$) and to P3 ($M = .46$), with no differences found between P2 and P3. These results indicated that P1 participants (i.e., those who in the pretest showed a lower level in resistance to premature closure) were those that showed a significantly greater increase in their tendency to resist rapid closure of figures. In originality, the results of the pretest–posttest ANOVA indicated significant differences between profiles, $F(2, 51) = 6.62$, $p = .003$. The Tukey post hoc analysis indicated significant differences ($p < .01$) between P1 ($M = 6.86$) and P3 ($M = –.65$), as well as differences between P2 ($M = 6.30$) and P3 ($M = –.65$); however, the change in P1 and P2 participants was similar. These results showed that the P1 and P2 participants (i.e., those who in the pretest phase presented low and medium levels in originality) were those that showed a significantly greater increase in originality or aptitude for presenting novel or uncommon ideas. In fluency of ideas, the results of the ANOVA showed that the pretest–posttest difference of means was significant, $F(2, 51) = 8.58$, $p = .001$. The Tukey test indicated significant differences ($p < .05$) for P1 ($M = 7.25$) in relation to P2 ($M = 2.37$) and to P3 ($M = –.95$), with no differences found between P2 and P3. These data suggested that the P1 participants (i.e., those who in the pretest phase had a low level of fluency) were those that showed a significantly greater increase in their capacity for offering ideas. In sum, the program was especially effective for participants who prior to the intervention showed low graphic–figural creativity—specifically for those who showed low capacity for abstractness, resistance to premature closure, originality, and fluency.

Changes in Participants With Low Levels in Graphic–Figural Creativity in the Creation of a Painting

In execution time for producing a painting (open theme), the results of the pretest–posttest ANOVA between profiles was significant, $F(2, 51) = 6.71$, $p = .003$. The Tukey multiple comparisons test indicated significant differences ($p < .05$) for P1 ($M = 1.20$) in relation to P2 ($M = –2.07$) and to P3 ($M = –4.21$), although no differences were found between P2 and P3. Therefore, the P3 participants (i.e., those who in the pretest took longer to complete the painting) were those that showed the most significant decrease in time taken. In originality of the painting, the results of the ANOVA showed the pretest–posttest difference of means between profiles to be significant, $F(2, 51) = 18.74$, $p = .000$. The Tukey post hoc analysis indicated significant differences ($p < .05$) for P1 ($M = 1.88$) in relation to P2 ($M = .90$) and to P3 ($M = –1.13$), as well as differences between P2 and P3. These results, confirming those obtained with the

Table 4. *Means, Standard Deviations and Analyses of Variance in Each Profile for Verbal and Graphic–Figural Creativity*

	Pretest						Pretest–Posttest Differences							
	Profile 1		Profile 2		Profile 3		Profile 1		Profile 2		Profile 3		ANOVA $F(2, 51)$	
Task	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Pretest	Pretest–Posttest
TTCT Verbal Total														
Fluency	11.63	3.22	20.40	2.80	32.67	5.63	17.00	13.48	16.65	19.06	6.13	14.05	121.58***	2.44
Originality	2.94	2.14	10.76	2.74	26.17	10.07	36.94	19.51	25.48	19.60	21.50	26.48	71.47***	2.24
Flexibility*	7.93	1.91	13.09	1.73	18.94	2.64	8.80	6.29	4.48	4.45	3.69	5.63	108.25***	4.17*
TTCT Graphic Total														
Abstractness Title**	0.67	0.47	2.00	0.00	3.00	0.00	0.59	1.09	–0.67	0.52	–1.50	0.71	46.48***	7.23**
Resistance Closure***	8.07	2.16	13.48	1.19	17.15	0.99	8.07	2.34	2.33	3.05	0.46	2.30	133.03***	30.39***
Originality**	2.14	1.61	6.52	1.70	16.82	6.05	6.86	4.33	6.30	4.73	–0.65	9.92	68.33***	6.62**
Elaboration	2.19	0.91	5.74	1.44	10.75	1.50	9.88	3.98	7.88	4.83	9.75	4.92	80.45***	1.15
Fluency***	15.31	3.00	20.84	2.71	31.26	4.11	7.25	5.56	2.37	4.55	–0.95	7.09	103.95***	8.58***
Creativity Picture														
Time**	9.90	2.73	14.23	1.07	18.57	1.87	1.20	5.35	–2.07	3.15	–4.21	2.83	77.99***	6.71**
Originality Judge 1***	1.00	0.00	2.30	0.47	4.25	0.46	1.88	1.41	0.90	1.03	–1.13	0.83	186.21***	18.74***

Note. TTCT = Torrance Test of Creative Thinking.
* $p < .05$. ** $p < .01$. *** $p < .001$.

TTCT, indicated that P1 participants (i.e., those who showed a low level in originality before the play program) were those that showed the most significant increase in this aspect. In sum, the participants who in the pretest phase took a long time to complete the painting, showing low levels of originality, were those whose graphic–figural creative performance improved most because their execution time decreased and their level of originality increased.

Effects of the Program in Boys and Girls

To assess whether the play program had a significant effect on the experimental participants according to gender, means and standard deviations for boys and girls and analyses of variance were calculated (see Table 5).

In verbal creativity, the pretest MANOVA on the TTCT scores did not show differences, a priori, according to gender, $F(1, 52) = .65$, $p = .585$; nor did the pretest–posttest MANCOVA, $F(1, 52) = 1.96$, $p = .133$, indicate any differences, suggesting that there was no differential effect of the program as a function of gender. As can be seen in Table 5, the pretest ANOVAs showed that there were no significant differences—that is, prior to the intervention, boys and girls showed similar levels in the three verbal creativity aspects. The pretest–posttest ANOVAs and the pretest–posttest ANCOVAs also failed to indicate significant differences between boys and girls, suggesting that the change occurring in verbal creativity as a result of the program was similar.

In graphic–figural creativity, the pretest MANOVA carried out with the TTCT scores did not show differences, a priori, according to gender, $F(1, 52) = .69$, $p = .629$; nor did the pretest–posttest MANCOVA, $F(1, 52) = 1.23$, $p = .309$, indicate a differential effect of the program as a function of gender. All the pretest ANOVAs indicated (see Table 5) that there were no significant differences—that is, before the intervention, boys and girls had similar levels in the indicators of graphic–figural creativity. Likewise, neither the pretest–posttest ANOVAs nor the pretest–posttest ANCOVAs indicated significant differences. In graphic–figural creativity assessed through direct judgment, the pretest MANOVA did not indicate differences, a priori, as a function of gender, $F(1, 52) = 1.32$, $p = .274$; nor did the pretest–posttest MANCOVA, $F(1, 52) = .73$, $p = .485$, indicate a differential effect of the program according to gender. The same can be said of the pretest–posttest ANOVAS and the pretest–posttest ANCOVAs (see Table 5). In sum, boys and girls showed similar levels of change in verbal creativity and graphic–figural creativity.

Discussion

The results suggested that the intervention program based on cooperative–creative play stimulated an increase in (a) verbal creativity in originality (i.e., in the capacity for contributing novel ideas that are far from obvious, common, or established and are statistically infrequent; and (b) graphic–figural creativity in several of its aspects such as resistance to premature closure of figures; originality, or aptitude for presenting novel, statistically infrequent ideas or solutions that are far from obvious, common, or established; elaboration, or aptitude for developing, extending, and embellishing ideas with additional details; and graphic creative performance. These results confirm Hypotheses 1 and 2, which proposed that the program would stimulate an increase in verbal creativity and graphic–figural creativity.

Likewise, Hypothesis 3 is confirmed because the program produced a significant improvement in those participants who in the pretest phase, before the play program began, showed low creativity. Specifically, these would be participants who in verbal creativity had a low level of flexibility and in graphic–figural creativity showed low capacity for abstractness in giving a title to a drawing, low capacity for resistance to closure, low capacity in originality or aptitude for presenting novel and infrequent ideas, and low level of fluency of ideas for doing drawings and needing a lot of time for producing a painting with a low level of originality. Nevertheless, and because these results might be affected by the statistical effect of "regression to the mean," they should be interpreted with caution. It would indeed be advantageous to test this hypothesis again, with other samples of children, with a view to ratifying the significant effect of the program on those with low levels of creativity. Regarding gender, the results show that boys and girls presented similar levels of change due to the program in verbal and graphic–figural creativity, thus confirming Hypothesis 4.

Table 5. *Means, Standard Deviations, and Analyses of Variance for Verbal and Graphic–Figural Creativity in Boys and Girls*

	Pretest				Pretest–Posttest Differences						
	Boys ($N = 25$)		Girls ($N = 29$)		Boys ($N = 25$)		Girls ($N = 29$)		ANOVA $F(1, 52)$		ANCOVA $F(1, 52)$
Task	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Pretest	Pretest–Posttest	Pretest–Posttest
TTCT Verbal Total											
Fluency	19.12	9.28	22.10	9.07	11.96	11.98	15.48	19.42	1.42	0.61	1.21
Originality	11.40	11.13	12.00	8.92	28.76	22.46	27.72	21.49	0.04	0.03	0.16
Flexibility	12.56	4.54	14.10	4.77	5.08	4.92	5.76	6.32	1.47	0.18	.64
TTCT Graphic Total											
Abstractness Title	0.84	0.62	0.97	0.82	0.48	1.05	0.28	1.25	0.38	0.41	0.13
Resistance Closure	12.32	3.50	13.52	3.62	4.32	3.59	2.55	4.11	1.51	2.78	0.34
Originality	7.56	5.73	9.55	7.73	5.48	7.12	3.21	7.62	1.12	1.27	0.56
Elaboration	5.20	2.87	4.93	2.43	7.56	4.46	9.52	4.63	0.13	2.48	1.86
Fluency	21.28	7.04	24.24	7.54	2.68	6.38	2.62	6.94	2.19	0.00	0.68
Creativity Picture											
Time	14.36	4.14	14.72	2.52	–2.08	4.81	–1.97	3.08	0.15	0.01	0.23
Originality Judge 1	2.44	1.23	2.00	0.96	0.48	1.12	1.24	1.64	2.17	3.83	1.36

Note. TTCT = Torrance Tests of Creative Thinking.

The research carried out confirmed the results of studies that had indicated positive effects of play on the development of creativity (Baggerly, 1999; Dansky, 1980a, 1980b; Howard et al., 2002; Kalmar & Kalmar, 1987; Mellou, 1995; Price-Coffee, 1995; Udwin, 1983; Yawkey, 1986) and research that had verified the possibility of training creativity (Antonietti, 2000; Baer, 1996; Caf et al., 1997; Curnow & Turner, 1992; Fleith et al., 2002; Komarik & Brutenicova, 2003; Kurtzberg & Reale, 1999; Parker, 1998; Saxon et al., 2003), as well as the results of work that had confirmed the relations between cooperation and creativity (Baloche, 1994; Mevarech & Kramarski, 1993; Strom & Strom, 2002). Furthermore, this study validates the program designed, provides a tool for promoting verbal and graphic–figural creativity in this age group, and completes a line of psychoeducational research based on creative play for children aged 6 to 12 years.

We considered that the positive effects of the program were derived, on the one hand, from the structural characteristics of the games themselves (communication, cooperation, emotional expression, etc.); and, on the other hand, from the emphasis placed on the closing phase of the game sessions in which the children reflect on satisfaction generated when receiving positive messages from oneself, emotional damage from perceiving negative messages or being rejected by the others, benefits as an outcome of cooperation versus competition, or the satisfaction by creative products that cooperative groups have carried out. The cooperative–creative games generated a positive classroom atmosphere that facilitated creativity; a finding in the same line as those emerging from previous studies (Dudek, Strobel, & Runco, 1993) that have stressed the importance of classroom atmosphere for creative potential.

The results presented here suggest the relevant role of social and affective factors in the development of creativity. Specifically, they underline the positive effect of cooperative games, of communications, and of emotional expressions for the development of creativity. The theoretical perspective proposed by Vygotsky (1933/1967) is confirmed, as is the perspective of researchers who link affect, play, and creativity (Russ, 1993, 1996, 1998, 2003a, 2003b; Russ & Kaugars, 2001; Russ et al., 1999; Shaw & Runco, 1994).

A possible limitation of this study is the lack of assessment of the characteristics of the adults who supervised the intervention and the influence this may have had on the effects of the program. Another limitation of this work concerns the use of experimental designs in natural educational contexts because they may be affected by confounding variables that influence the results. For this reason, future research may consider the use of mixed designs incorporating observational methodology by way of a complement. Possible future research lines include (a) assessment of this program in other domains of creativity; (2) assessment of the effects of the creative play program, but applying the tasks in a competitive setting; (c) exploration of how far the effects of the program are maintained in the long term; and (d) how training the adults involved in applying the intervention might influence its effects.

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