Revista de Psicodidáctica, 2015, 20(2), 263-283
www.ehu.eus/revista-psicodidactica
ISSN: 1136-1034 eISSN: 2254-4372

DOI: 10.1387/RevPsicodidact.13313

Longitudinal Study of the Effects of the *Aprender a Convivir* Program on Children's Social Competence

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Abstract

Social competence is considered one of the fundamental protection factors in the emergence of behavior problems since facilitates the social adjustment of subject and their psychological well-being. The investigation analyze the impact of a universal prevention program on three dimensions of social competence: cooperation, interaction and social independence. This is a quasi-experimental longitudinal study where the evolution of 91 children from 3 to 5 years of age is observed. Data analysis is carried out through a repeated-measures mixed ANOVA, where three factors were included: time (6 measurements), group and gender. Results show participant improvement on all the variables that were analyzed. The change becomes clearly evident in the experimental group after the first year of intervention, and this change continues over the next two years. There are small effects from the intervention program on social interaction (d = 0.20), moderate effects on social cooperation and social independence (d = 0.64 and d = 0.71, respectively) and large effects on the global measurement of social competence (d = 1.04).

Keywords: *Aprender a Convivir* program, preschool, kindergarten, universal prevention, Preschool and Kindergarten Behavior Scale-2 (PKBS-2).

Resumen

La competencia social es un potente factor de protección frente al desarrollo de los problemas de conducta infantiles pues facilita el ajuste social del sujeto y su bienestar psicológico. El estudio analiza el impacto de un programa de prevención universal sobre tres dimensiones de la competencia social: cooperación, interacción e independencia social. Se trata de un estudio cuasiexperimental de corte longitudinal donde se observa la evolución de 91 niños desde los 3 hasta los 5 años de edad. El análisis de datos se llevó a cabo mediante un ANOVA mixto de medidas repetidas en el que se incluyeron tres factores: tiempo (6 medidas), grupo y el sexo. Los resultados muestran una mejora de los participantes en todas las variables analizadas. El cambio es evidente en el grupo experimental desde el primer año de intervención y se mantiene en los dos años siguientes. Los efectos del programa de intervención son bajos en interacción (d = 0.20), moderados en cooperación e independencia (d = 0.64 y d = 0.71) y altos en la medida global de competencia social (d = 1.04).

Palabras clave: Programa *Aprender a Convivir*, competencia social, Educación Infantil, prevención universal, Preschool and Kindergarten Behavior Scale-2 (PKBS-2).

Acknowledgments: This study is part of the Project I+D+i, entitled *"Longitudinal study of the effects of the Aprender a Convivir program on the development of social competence and the prevention of antisocial behavior"* (EDU2009-11950) supported by the Ministry of Science and Innovation. It has also been funded with a grant from the Ministry of Science and Education, awarded to the first author (AP2010-2367). The authors would also like to thank the participating schools.

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Introduction

A recent theoretical model defines social competence as "the capacity to articulate thoughts, feelings and actions according to personal objectives and the demands of the situation and the culture, generating positive consequences for the person and for his/her relationships with others" (Del Prette & Del Prette, 2011, p. 33). This psychological construct is complex and according to Merrell (2002), is composed of prosocial, adaptive and positive behaviors. The adaptive nature of behavior has an evaluative aspect since the judgment of others is necessary in order to assess the level of social competence a person shows when faced with particular social tasks. Many of the instruments devised to measure social competence (sociometric tests, evaluation scales and peer ratings) were designed to be performed by people close to the subject of the evaluation, that is, parents, teachers or fellow pupils.

Until a few years ago, the procedures for evaluating social competence were focused on the school population from the age of six. However, the change of perspective produced in the study of socioemotional development, designed for a more educational and preventive approach, has led to the construction of instruments aimed at younger children (Merrell, 2002; Reynolds & Khamphaus, 2004; among others). Likewise, in the field of intervention, in the last two decades, various programs of early prevention have been designed for the infant population. Some examples are the *PATHS-Preschool* (Domitrovich, Greenberg, Kusche, & Cortes, 2004); *Incredible Years: Dina Dinosaur Classroom Curriculum* (Webster-Stratton & Reid, 2003); and the *Al's Pals: Kids Making Healthy Choices* (Geller, 1999).

The need to evaluate possible social deficits and develop intervention strategies that promote a person's social potential from an early age is supported by previous empirical evidence which shows the positive relationship that social competence has with academic achievement (Bradshaw, Bottiani, Osher, & Sugai, 2014; Del Prette, Del Prette, De Oliveira, Gresham, & Vance, 2012; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), self-concept (Coehlo, Sousa, & Figueira, 2014), and emotional intelligence (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Denham et al., 2003); and likewise the negative relationship that links it with the manifestation of certain pathologies and violent behaviors (Bornstein, Hahn, & Haynes, 2010; Bradshaw, Waasdorp, & Leaf, 2012; Burt, Obradović, Long, & Masten, 2008; Cerezo, Sánchez, Ruiz, & Arense, 2015; Daly, Nicholls, Aggarwal, & Sander, 2014). Children with low social competence are usually more prone to developing internalized and externalized behavior problems and are valued less

highly by their peers (Camodeca, Caravita, & Coppola, 2014). For all these reasons, social competence has been considered one of the fundamental protection factors for the healthy development and well-being of individuals (Ferrer-Wreder, 2014).

The development of proposals for early intervention for children of pre-school age has been broader in the international sphere (Cooper, Goodfellow, Muhleim, Paske, & Pearson, 2003; Domitrovich et al., 2004; Geller, 1999; Larmar, Dadde, & Shochet, 2006; Petermann & Natzke, 2008; Shure, 1993). In Spain a variety of programs has been designed to deal with social competence, aimed at primary and secondary pupils (Díaz-Aguado, 2004; Garaigordobil, 2005; Trianes, 2013; Vallés, Vallés, & Vallés, 2013, among others). However, there are not many programs at the Early Childhood Education stage. In this respect one could mention the program *Relacionarnos bien* (Segura & Arcas, 2013), the *PAHS —Programa de Asertividad y Habilidades Sociales—* (Monjas, 2011), and *Aprender a Convivir* (Alba, Justicia-Arráez, Pichardo, & Justicia, 2013), a universal prevention program carried out in school with the goal of promoting the social competence of 3 to 5 year-old pupils.

The *Aprender a Convivir* program is based on Bandura's (1977) Social Learning program and on Patterson, Capaldi & Bank's (1991) model on the development of behavioral problems. Taking both models into account, it can be considered that aggressive behavior and other behavioral problems may be caused by the interaction between the child and the response of significant others. Behavior is learnt initially through observation, but the consequences of behaviors are those that maintain the conduct, whether it be socially competent or incompetent.

Despite the fact that in Spain the field of early intervention in infant social competence is being amply developed, research that contributes data on the efficacy of interventions is still scarce. In this respect, in accordance with Ferrer-Wreder (2014), the great majority of programs that have assessed its effectiveness and that contribute quality criteria are American or Canadian programs, as has been evident in the results obtained from meta-analytic review studies published recently (Beelmann & Lösel, 2006; Durlak et al., 2011), where on analyzing the efficacy of universal prevention interventions, only 13% to 15% of the programs included were designed and implemented outside those countries. These data justify making a rigorous evaluation of intervention programs (independently of the age they are aimed at) one of the prime objectives in the applied field of social competence, contributing evidence that will guarantee efficacy in its application. Such a consideration has been the main

motive prompting this investigation. Some indications of quality in interventions are: having been rigorously evaluated by means of an empirical study; including pre-test and post-test evaluation measures during the implementation; using a comparison group; providing indicators of effect of size; and having been replicated in other studies carried out.

Currently, apart from the meta-analyses mentioned previously, some studies exist that have specifically analyzed the quality and effectiveness of the universal prevention programs aimed at infants and that are implemented in the school environment (Joseph & Strain, 2003; CASEL, 2013). The *CASEL Guide* (*Collaborative for Academic, Social and Emotional Learning*) published in 2013 provides a systematic framework for evaluating the quality of programs that promote socio-emotional learning (*SEL, Social and Emotional Learning*). Included in it are universal prevention interventions carried out in the United States, aimed at pupils in early childhood and primary education. Carrying out this type of study encourages the spread of school interventions of good quality and facilitates their being applied by professionals within the educational sphere.

The *Aprender a Convivir for Early Childhood Education (3-5 years)* program has been evaluated through cross-sectional (Benítez, Fernández, Justicia, Fernández, & Justicia-Arráez, 2011a; Fernández 2010; Fernández, Benítez, Fernández, Justicia, & Justicia-Arráez, 2011; Justicia-Arráez, Pichardo, & Justicia, 2015, in press) and longitudinal (Alba, Fernández-Cabezas, Justicia, & Pichardo, 2015) studies, in this last case using multiple control groups. On this occasion the main goal of the investigation is to carry out a longitudinal study over three years to analyze the impact of the program in improving the social competence of the Early Childhood Education pupils (3-5 years), using an external evaluation instrument. The intention is to verify whether the learning of content related to the adoption of rules for living together, to the recognition and expression of feelings and the mastery of skills of communication and cooperation, help to improve the levels of social cooperation, social interaction and social independence of boys and girls at this educational stage. Merrell (2002) conceived these last variables —cooperation, interaction and independence— as dimensions that constitute infant social competence in the area of relationships with adults and also with peers. It is hoped that all those aspects that form part of children's social competence at this age will improve through the implementation of the *Aprender a Convivir for Early Childhood Education* program. In addition, the sex variable will be analyzed, since diverse studies have indicated the existence of differences between boys and girls in various social behaviors (Pa-

terski, Golombok, & Hines, 2011; Romer, Ravith, Tom, Merrell, & Wesley, 2011). The goal is to test whether at this age such differences are noticed, starting from the hypothesis that it is girls who will show higher levels of social competence.

Method

Participants

A total of 102 boys and girls aged 3 years participated in the longitudinal study. Due to experimental mortality, 11 participants were removed. The definitive sample in the study comprised the remaining 91 boys and girls. The pupils came from three educational centers in Granada's capital, all of an average socio-economic level. The selection of centers was made by incidental probability sampling. The assignation of centers to different levels of management was carried out randomly before allocating the pupils. The experimental group was formed of two classrooms in one of the educational centers: the control group consisted of one classroom in each of the other two centers.

With regard to the distribution of participants according to group and sex, it should be specified that the experimental group was formed of 48 students (M_{age} = 3 years and 5 months, *SD* = 3.63) from the same educational center, of whom 43.7% were boys and 56.2% girls. The control group consisted of 43 students (M_{age} = 3 years and 5 months, *SD* = 3.41), 44.1% boys and 55.9% girls, from two different educational centers. All the participants were enrolled for the first time in an educational center where classes of the second stage of Early Childhood Education (3-6 years) were being taught.

Measures

The same researchers measured the social competence of the participants throughout the three years the investigation lasted, using the *Escala de Observación en Educación Infantil (EOEI)*, a version of the *Preschool and Kindergarten Behavior Scale for Teachers and Caregivers- PKBS-2* (Merrell, 2002), translated and adapted to Spanish (Fernández et al., 2010). The original instrument consists of 76 items that measure social competence and behavioral problems in children of 3 to 6 years. For the study, only the social competence scale was used. This was formed of 34 items grouped into 3 subscales: (a) *social cooperation* —12 items—; (b) *social interaction* —11 items—; and (c) *social independence* —11 items—. Some examples of the items that compose the instrument might be "Share your toys and other belongings", "Invite other children to play" and "Feel safe in social situations". A Likert-type scale is used where the response values oscillate between 0 (never) and 3 (often). The aver-

age scores of each subscale are utilized, and therefore the minimum and maximum scores coincide with the range of response values. The reliability indices of the original instrument are adequate *(social cooperation* α = .94; *social interaction* α = .92; *social independence* α = .88; and *total social competence* α = .96). The structure of the scale was confirmed in the Spanish population by Benítez et al. (2011b) through a confirmatory factor analysis with adequate adjustment and reliability values. The internal consistency coefficients from the sample in the present study were adequate in *total social competence* α = .93; and in the subscales of *social cooperation* α = .84; *social interaction* α = .92; and *social independence* α = .89.

Procedure

The longitudinal study was carried out over three consecutive academic years. At the start of the investigation, contact was made with the different participating centers and after obtaining the consent of the families, all the classes of 3 year-olds at each educational center were included in the investigation (a total of four classes). Four researchers randomly assigned to each class were charged with carrying out the observation and evaluation of the pupils. The two researchers from the experimental groups were also charged with implementing the *Aprender a Convivir* program throughout the three years the intervention lasted.

During each academic year, the following phases were pursued: (a) observation and gathering of initial data (October-December); (b) implementation/non-implementation of the *Aprender a Convivir* program (January-April); (c) observation and final gathering of data (May-June); and (d) data analysis (July). The observation phases and the gathering of data were carried out in each classroom by the same researchers (Table 1). The observation methodology was the same in the experimental and control groups. Each academic year, three weekly observation sessions were carried out, for three months in the pre-phase and two months in the post-phase. The sessions were planned so as to be able to observe at different times in the school day. The researchers followed some observation protocols in which the frequency of particular social behaviors were noted down. In addition to the observation sessions, they relied on the help of the teaching staff for the completion of the questionnaires.

After the pre-evaluation, the researchers applied the *Aprender a Convivir* program in the experimental group. In the first year of intervention the 3 year-old program was implemented; the following year the 4 year-old one and in the last year of intervention the 5 year-old program was applied. Each intervention program lasted twelve weeks, which added up to twen-

Table 1

Assessment and Data Collection Phases

	Participants					
	3-year-olds		4-year-olds		5-year-olds	
	T1	T2	T3	T4	T5	T6
Experimental group	Pre assessment	Post assessment	Pre assessment	Post assessment	Pre assessment	Post assessment
Control group	Pre assessment	Post assessment	Pre assessment	Post assessment	Pre assessment	Post assessment

ty-four sessions per year/program. Each session lasted approximately 45 minutes and was carried out during school hours (usually after assembly time) and the teaching staff were present, intervening when necessary.

The *Aprender a Convivir for Early Childhood Education* program is structured around four blocks. The first block, "The rules and complying with them", works on rules for living together and interpersonal relations, values and resolving problems associated with failure to abide by the rules. The second block, "Feelings and emotions" deals with the identification of feelings, the expression and regulation of emotions and the resolution of problems associated with the emotional sphere. The third block, "Communication skills" tackles basic skills for communicating appropriately (listening, asking for a word and giving thanks). Finally, the last block, "Help and cooperation" promotes certain prosocial behaviors such as helping, sharing and cooperating. With regard to the methodology, the program is carried out with the help of three characters represented by puppets, charged with transmitting to the pupils the knowledge they need to acquire. Resources adapted for infant pupils, such as stories, songs and games are also used. For more information about the content and structure of the sessions we recommend consulting Alba et al. (2013) and Fernández (2010). For the duration of the intervention phase in the experimental group, no programs were applied in the control group. After this period, the researchers completed the questionnaires again in the post-evaluation (Table 1), in order to finally perform the data analysis.

Statistical analyses

A quasi-experimental pre-post longitudinal study was carried out with a control *quasi* group and 6 repeated measures. The data analysis

was performed using the statistical program *IBM SPSS Statistics* 20.0. for Mac.

To begin with, descriptive statistics were obtained, with the aim of exploring the average scores and typical deviations of the participants in each of the variables measured. Later, the principal analyses of the investigation were carried out using a mixed repeated-measures ANOVA (6x(2x2). The factors included in the model were time (pretest-postest: T_1, T_2, T_3, T_4, T_5 y T_6), group (experimental-control) and sex (boy-girl). The relevant *F* statistics were extracted in accordance with the fulfilment of assumed sphericity by Mauchly's (1940) proof. Likewise, *post hoc* Bonferroni tests were carried out to determine the levels of variables that were significant. To obtain data at the inter-group level, a one-factor repeated measures ANOVA was performed in both the experimental group and the control group, including time as a factor (T_1, T_2, T_3, T_4, T_5 y T_6).

Finally, the size of effect (*d* index) proposed by Cohen (1988), which allows quantification of the magnitude of differences found between the groups over time, was estimated. Low effects ($.20 \leq d \leq .49$), moderate effects ($.50 \leq d \leq .79$) and high effects ($d \geq .80$) were established.

Results

In Table 2, the descriptive statistics of the variables *social cooperation*, *social interaction, social independence* and *total social competence* are shown, including the average scores and typical deviations of the experimental and the control groups for the six evaluation times. As can be observed, the table also includes the *F* statistics obtained from the mixed repeated-measures ANOVA in the factor time, group and interaction of time*group.

In Table 3, the measurements and typical deviations of each of the variables is analyzed according to the sex of the participants. Likewise, the *F* statistics of the factors sex, time*sex and group*sex are included in the table.

Longitudinal study of the variables of social competence

The results of the mixed repeated-measures ANOVA 6x2x2 and the inter-group ANOVA, carried out with each variable, are now shown.

Social cooperation

The data analysis indicates a significant main effect of the time factor ($F_{(1,87)} = 66.41$, $p < .001$) since the average scores increased from T_1 to T_2, from T_3 to T_4 and from T_5 to T_6. Also, the inter-group repeated-measures ANOVA carried out with the experimental group showed a main effect of time ($F_{(1,46)} = 54.42$, $p < .001$), significant differences being found from T_1 to T_2 ($p < .001$), from T_2 to T_3 ($p < .01$), from T_3 to T_4 ($p < .001$)

Table 2

Descriptive Statistics and Mixed Repeated-Measures ANOVA of the Time and Group Comparisons

		Experimental		Control		Comparison phases *F* (1,87)		
		M	*DT*	*M*	*DT*	Time	Group	Time*group
Social cooperation	T_1	2.30	0.44	2.36	0.30	66.41***	5.12*	8.53*
	T_2	2.72	0.21	2.48	0.34			
	T_3	2.62	0.28	2.65	0.31			
	T_4	2.85	0.19	2.63	0.30			
	T_5	2.78	0.26	2.69	0.27			
	T_6	2.88	0.14	2.78	0.25			
Social interaction	T_1	2.21	0.53	1.92	0.61	105.74***	47.98***	9.92***
	T_2	2.75	0.24	2.09	0.56			
	T_3	2.61	0.25	2.41	0.36			
	T_4	2.92	0.11	2.42	0.38			
	T_5	2.88	0.18	2.54	0.38			
	T_6	2.95	0.08	2.59	0.34			
Social independence	T_1	2.43	0.53	2.38	0.44	59.14***	24.45***	9.82***
	T_2	2.82	0.22	2.36	0.41			
	T_3	2.71	0.27	2.62	0.32			
	T_4	2.93	0.09	2.64	0.29			
	T_5	2.94	0.10	2.73	0.27			
	T_6	2.99	0.02	2.74	0.28			
Total social competence	T_1	2.31	0.42	2.23	0.38	11.98***	37.92***	13.61***
	T_2	2.76	0.18	2.31	0.37			
	T_3	2.65	0.21	2.56	0.25			
	T_4	2.90	0.10	2.56	0.26			
	T_5	2.87	0.14	2.65	0.25			
	T_6	2.94	0.06	2.70	0.25			

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

and from T_5 to T_6 ($p < .01$). No significant differences were found from T_4 to T_5 ($p = .055$). In the control group, there was also a main effect of time ($F_{(1,46)} = 23.40, p < .001$) but significant differences were found only from T_2 to T_3 ($p < .01$) and from T_5 to T_6 ($p < .01$). The global change of scores from T_1 to T_6 was significant in the experimental group ($p < .001$) and in the control group ($p < .001$).

Table 3

Descriptive Statistics According to Sex and Mixed Repeated-Measures ANOVA of the Time, Group and Sex Comparisons

		Experimental		Control		Comparison phases		
		Boy	Girl	Boy	Girl	Sex	Time*sex	Group* sex
		M (DT)	*M (DT)*	*M (DT)*	*M (DT)*	*F* (1,87)	*F* (1,87)	*F* (1,87)
Social cooperation	T_1	2.33 (0.32)	2.28 (0.52)	2.23 (0.34)	2.47 (0.23)	1.31	0.47	4.19*
	T_2	2.77 (0.18)	2.68 (0.23)	2.40 (0.36)	2.54 (0.32)			
	T_3	2.65 (0.26)	2.60 (0.30)	2.60 (0.31)	2.69 (0.32)			
	T_4	2.88 (0.17)	2.83 (0.21)	2.56 (0.34)	2.69 (0.25)			
	T_5	2.78 (0.22)	2.78 (0.29)	2.61 (0.32)	2.75 (0.22)			
	T_6	2.88 (0.13)	2.87 (0.16)	2.69 (0.32)	2.85 (0.15)			
Social interaction	T_1	2.14 (0.52)	2.26 (0.55)	1.65 (0.66)	2.13 (0.50)	8.35**	1.58	7.61**
	T_2	2.77 (0.23)	2.73 (0.25)	1.89 (0.61)	2.25 (0.47)			
	T_3	2.65 (0.23)	2.59 (0.26)	2.22 (0.40)	2.56 (0.24)			
	T_4	2.90 (0.13)	2.93 (0.10)	2.25 (0.44)	2.56 (0.27)			
	T_5	2.90 (0.13)	2.87 (0.21)	2.39 (0.44)	2.66 (0.29)			
	T_6	2.94 (0.11)	2.96 (0.06)	2.44 (0.39)	2.70 (0.24)			
Social independence	T_1	2.48 (0.46)	2.39 (0.58)	2.19 (0.48)	2.54 (0.35)	3.45	0.25	5.77*
	T_2	2.82 (0.24)	2.81 (0.21)	2.25 (0.47)	2.44 (0.34)			
	T_3	2.75 (0.27)	2.68 (0.28)	2.50 (0.37)	2.71 (0.23)			
	T_4	1.94 (0.08)	2.92 (0.10)	2.53 (0.32)	2.72 (0.22)			
	T_5	2.93 (0.12)	2.96 (0.07)	2.66 (0.34)	2.78 (0.18)			
	T_6	2.99 (002)	2.99 (0.02)	2.65 (0.36)	2.81 (0.18)			
Total CS	T_1	2.32 (0.36)	2.31 (0.47)	2.03 (0.41)	2.38 (0.26)	6.61**	0.87	9.42**
	T_2	2.79 (0.17)	2.74 (0.19)	2.18 (0.42)	2.41 (0.30)			
	T_3	2.68 (0.19)	2.62 (0.21)	2.44 (0.30)	2.65 (0.18			
	T_4	2.90 (0.09)	2.90 (0.11)	2.44 (0.30)	2.66 (0.18)			
	T_5	2.87 (0.11)	2.87 (0.17)	2.56 (0.31)	2.73 (0.16)			
	T_6	2.94 (0.07)	2.94 (0.06)	2.59 (0.30)	2.70 (0.15)			

Note. *$p < .05$. **$p < .01$. ***$p < .001$. CS = *social competence*.

A main effect of the group factor was also found ($F_{(1,87)} = 5.12$, $p < .05$), showing differences between the experimental and control groups over time, the experimental group being the one that obtained higher scores. In addition, significant interaction effects were found between the time*group factors ($F_{(1,87)} = 8.53$, $p < .001$), which together with the *post-hoc Bonferroni* test, revealed significant differences in favor of the experimental group at T_2, T_4 and T_6. The magnitude of differences between the groups from T_1 to T_6 was moderate as indicated by the estimated size of effect ($d = 0.64$).

No main effects of sex were found ($F_{(1,87)} = 1.31$, $p = .25$), but there was an effect of the interaction

group*sex ($F_{(1,87)} = 4.19, p < .05$). The time*group*sex comparison was not significant ($F_{(1,87)} = 0.48$, $p = .710$). The *post-hoc Bonferroni* tests indicated significant differences in favor of the girls only in the control group, in T_1 ($p < .05$) to T_6 ($p < .05$).

Social interaction

The mixed repeated-measures ANOVA showed a main effect of time ($F_{(1,87)} = 105.74$, $p < .001$), since the participants improved their scores through the three years of intervention. Within the experimental group, the inter-group ANOVA indicated a main effect of time ($F_{(1,46)} = 67.79$, $p < .001$). The post-hoc tests showed significant differences from T_1 to T_2 ($p < .001$), from T_2 to T_3 ($p < .01$), from T_3 to T_4 ($p < .001$) and from T_5 a T_6 ($p < .01$). No significant differences were found from T_4 to T_5 ($p = 1.00$). In the control group there were also main effects of time ($F_{(1,46)} = 49.21$, $p < .001$). In this case the *post-hoc* tests only showed significant differences from T_1 to T_2 ($p < .05$) and from T_2 to T_3 ($p < .001$). The global change from T_1 to T_6 was significant in both groups (experimental $p < .001$; control $p < .001$).

There were also main effects of the group factor ($F_{(1,87)} = 47.98$, $p < .001$), showing that significant differences existed in favor of the experimental group. In addition, interaction effects were found between the time*group factors ($F_{(1,87)} = 9.92$, $p < .001$), establishing significant differences in favor of the experimental group at T_1, T_2, T_3, T_4, T_5 and T_6. The groups did not start equal at the beginning of the investigation (T_1); however, the ANCOVA performed indicated that the existing differences between the groups continued to be significant at T_2 ($F_{(1,88)} = 105.85$, $p < .001$). These differences increased over time, becoming greater at T_2, T_4, and T_6 . The longitudinal size of effect when the groups were compared in this variable was low ($d = 0.20$).

With regard to sex, it was the girls who obtained the highest scores in this variable ($F_{(1,87)} = 8.35$, $p < .01$). There was an effect of the interaction group*sex ($F_{(1,87)} = 7.61$, $p < .01$) but not in the time*group*sex comparison ($F_{(1,87)} = 0.44$, $p = .699$). The *post hoc* tests showed that only in the control group were the differences of sex in favor of the girls, at all the evaluation times [T_1 ($p < .01$); T_2 ($p < .01$); T_3 ($p < .001$); T_4 ($p < .001$); T_5 ($p < .01$); and T_6 ($p < .001$)].

Social independence

In this variable, analysis of the mixed ANOVA carried out proved the existence of main effects of the time factor ($F_{(1,87)} = 59.14$, $p < .001$). The inter-group analysis also indicated a main effect of this factor in the experimental group ($F_{(1,46)} = 36.13$, $p < .001$), with significant differences from T_1 to T_2 ($p < .001$), from T_3 to T_4 ($p < .001$) and from T_5 to T_6 ($p < .001$). There

were no differences from T_2 to T_3 ($p = .159$) or from T_4 to T_5 ($p = 1.00$). In the control group there was a main effect of time ($F_{(1,46)} = 34.17$, $p < .001$), but in this case there were significant differences only from T_2 to T_3 ($p < .001$) and from T_4 to T_5 ($p < .05$). The global change from T_1 to T_6 was significant in both groups at a level $p < .001$.

Regarding the group factor, the analysis indicated a main effect ($F_{(1,87)} = 24.45$, $p < .001$). The participants in both groups improved their scores in social independence, although the subjects of the experimental group obtained higher scores, since a main effect of the time*group intervention was obtained ($F_{(1,87)} = 9.82$, $p < .001$). The *post hoc* tests proved the existence of significant differences in favor of the experimental group at T_2, T_4, T_5 and T_6. The size of effect when comparing the groups was moderate ($d = 0.71$).

There were no main effects of the sex factor ($F_{(1,87)} = 3.45$, $p = .066$). However, there was an effect of the interaction group*sex ($F_{(1,87)} = 5.77$, $p < .05$). The time*group*sex comparison was not significant ($F_{(1,87)} = 1.88$, $p = .143$). The *post hoc* tests indicated that there were differences of sex in favor of the girls within the control group, at T_1 ($p < .05$), T_3 ($p < .05$), T_4 ($p < .01$) and T_6 ($p < .01$).

Total social competence

The results of the mixed ANOVA obtained in *total social competence* showed the existence of main effects of all the factors included in the analytical model: time ($F_{(1,87)} = 111.98$, $p < .001$), group ($F_{(1,87)} = 37.92$, $p < .001$) and sex ($F_{(1,87)} = 6.61$, $p < .001$).

With respect to the time factor, the inter-group analysis performed with the one-factor repeated-measures ANOVA confirmed the main effect of this factor, both in the experimental group ($F_{(1,46)} = 73.96$, $p < .001$) and in the control group ($F_{(1,46)} = 52.34$, $p < .001$). Within the experimental group, the *post hoc* tests indicated differences from T_1 to T_2 ($p < .001$), from T_2 to T_3 ($p < .001$), from T_3 to T_4 ($p < .001$) and from T_5 to T_6 ($p < .001$). There were no differences from T_4 to T_5 ($p = .564$). Within the control group, there were differences only from T_2 to T_3 ($p < .001$) and from T_4 to T_5 ($p < .01$). The global change from T_1 to T_6 was significant in both groups (experimental $p < .001$; control $p < .001$).

Moreover, besides the main effect of the group factor, interaction effects of time*group were found ($F_{(1,87)} = 13.61$, $p < .001$), given that there were significant differences in favor of the experimental group. The *post hoc* tests indicated differences at T_2, T_3, T_4, T_5 and T_6. Finally, the magnitude of size of effect in *total social competence* was high ($d = 1.04$).

In relation to sex, the results showed that it is girls who reach higher values in social competence. Besides the main effect of this

factor, there was an effect of the group*sex interaction ($F_{(1,87)} = 9.42$, $p < .01$). There were no effects of the time*group*sex interaction ($F_{(1,87)} = 0.83$, $p = .465$). The *post hoc* tests showed differences in favor of the girls but only in the control group, at T_1 ($p < .01$), T_2 ($p < .05$), T_3 ($p < .01$), T_4 ($p < .01$), T_5 ($p < .05$) and T_6 ($p < .05$).

Discussion

The results obtained in the longitudinal study about the effect of the *Aprender a Convivir for Early Childhood Education* program show that the intervention carried out contributed to improving the social competence of the 3, 4 and 5 year-old pupils. The effects of the intervention were significant in each of the variables analyzed since the boys and girls who participated in the intervention improved in social cooperation, social interaction, social independence and in their total social competence. Thus, the starting hypothesis is verified.

Regarding the effects of the program on *social cooperation*, both groups started equal at the beginning of the investigation; however, after the children's participation in the program (at 3 years and also at 4 and 5 years), differences were generated between the groups. The pupils who had participated in the *Aprender a Convivir* program had acquired greater skill in cooperating with others, respecting and following rules, sharing and using their free time appropriately. However, in the time that passed between the conclusion of the one-year program and the commencement of the following one (from T_2 to T_3 and from T_4 toT_5) —a period that coincided with the summer holidays— a slight regression in average scores was observed. This drop in scores diminished after the second year of implementation, which probably reflects a tendency for the program's effects to be maintained. Thus, the time the intervention lasts is a key element contributing to the efficacy of the implementation (Ttofi & Farrington, 2011).

As with the *Aprender a Convivir* program, other early intervention programs that have also been evaluated have caused a positive improvement in the prosocial behavior of the pupils (Kramer, Caldarella, Christensen, & Shatzer, 2010; Domitrovich, Cortes, & Greenberg, 2007; Moraru, Stoica, Tomuletiu, & Filpisan, 2011). However, some programs that also contributed to the improvement of 4 year-old boys and girls in multiple variables related to social behavior did not produce significant effects on social cooperation, also measured with the PKBS-2, as occurred in the case of the *Al's Pals* program (Lynch, Geller, & Schmidt, 2004).

Moreover, the moderate indicator of size of effect estimated in this variable is very positive since it proves the impact of the program on the behaviors measured. *Aprender a Convivir* favors the learning of

prosocial behaviors such as sharing, helping and cooperating. In addition, it is hoped that the pupils will know how to work in groups, following some basic rules of coexistence. The development of these aspects has proved key for improvement in the *social cooperation* variable. Programs like the *PATH-Preschool* also had a positive impact on social cooperation at 3 and 4 years, achieving a low size of effect in this variable (d = 0.32), although in this case the intervention only lasted a year and the sample came from a poor socio-economic background (Domitrovich et al., 2007).

The effects found in *social interaction* were also positive although the impact of the program was lower. The program favors the learning of communication skills (asking for a word, apologizing and formulating questions) and of emotional aspects (identification, expression and controlling the emotions). The development of such content is directly related to improvement in this variable, since after the intervention, boys and girls were shown to be more understanding with others, participated more freely in class conversations, were supportive of each other with peers and adults and showed affection to others. The differences between the groups were clear from the beginning and increased progressively over time, augmenting at the end of each intervention (T_2, T_4 and T_6). When the pupils completed the infant school stage, having participated in the program for three years, they reached almost the maximum score in this variable (2.95 out of 3). That this is the social interaction where the pupils have improved most but where the effect of the program has been least may be due to the fact that from 3 years, attention to peers increases and more time is invested in these relationships, especially in the school context (Trianes & Infante, 2007). The socializing effect that school exercises on a person is very powerful since it facilitates the commencement of interactions with peers, a key element for social development (Santrock, 2007).

In the *social independence* variable the groups started off equal but differences appeared after application of the program at 3 years (T_2). From that time, the experimental group obtained higher scores than the control group, the differences being significant from T_4 until the end of the intervention at T_6.The effects of the program were moderate with respect to this variable and after obtaining the results it can be affirmed that after three years of intervention, the subjects of the experimental group are more autonomous from a social point of view since they feel more and more secure in different situations, play with different children, try to do things for themselves, play and work in an independent way and accept separation from their parents without a problem. The *Aprender a Convivir* program emphasizes aspects that help improve the social autonomy of the child, such as, for example, developing basic communication skills,

playing with different girls and boys, learning the guidelines for resolving problems for oneself and controlling the emotions. These results coincide with those of other studies in which the impact of a program on the social independence of 4 year-old children has also been analyzed (Domitrovich et al., 2007). Nevertheless, although not to the same extent, the children in the control group also improve their level of independence, due among other causes, to the effect of actually attending school, the influence of relationships with peers and with adults and, likewise, to their ongoing progress in social development.

By way of a summary, the results obtained in the total *social competence* variable show the positive effects produced by the *Aprender a Convivir* program. The pupils in the experimental group demonstrated differences after the first year of intervention (T_2). From that time until the end of the investigation, the differences between the two groups were maintained. The program had a big effect on the social competence of the pupils throughout the three years of intervention.

With regard to the influence of sex on the variables analyzed, the starting hypothesis is partially confirmed. There were differences between the boys and girls in all the variables analyzed, but only within the control group, as was proved by the interaction effects found. Therefore, it is advisable to be cautious when interpreting these results and to continue investigating in order to be able to draw some conclusions. Studies carried out with boys and girls of the same age found no differences between the sexes in this type of variable (Moraru et al., 2011; Ştefan & Miclea, 2013). However, studies with older boys and girls did establish such differences (Romer et al., 2011).

Conclusions, limitations and prospects

The fundamental goal of interventions based on the promotion of social competence is to boost the protection factors and reduce the risk factors associated with social problems (Joseph & Strain, 2003). Thus it must be concluded that the *Aprender a Convivir for Early Childhood Education (3-5)* program advances one of the main protection factors that contribute to optimum personal development: social competence (Burt et al., 2008). The 3 year-old pupils in the experimental group significantly improved their levels of social competence after three years of intervention. The program accelerated the appearance of certain behaviors that are usually established later, as is the case with social independence (Erickson, 2009). These results, combined with the positive effects obtained in the longitudinal study of the *Aprender a Convivir* program, applied in the first cycle of Primary Education (Alba, 2013), contribute to the consolidation of this educational plan for universal prevention.

The study has certain limitations. Theoretically, social competence is a multi-dimensional construct that should be evaluated in diverse contexts and by various agents. Here, competence had been evaluated only in school context by qualified researchers, with the help of the teaching staff, but no other direct measures of the competence of the child, nor measures contributed by the parents were obtained. It would be advisable in future investigations to carry out multi-agent and multi-report evaluations.

Moreover, the observations and evaluations of the researchers in the experimental group could be biased as it is they who implement the program. However, in both the control and the experimental groups, an exhaustive monitoring of all the participants was carried out over three years, with assessment at six different times; in addition, the evaluators of the control and experimental groups were different people. Besides, previous longitudinal investigations in which the *Aprender a Convivir* program was applied and where social competence was evaluated by the teaching staff obtained positive results (Alba et al., 2015; Benítez et al., 2011a; Fernández, 2010; Fernández et al., 2011; Justicia-Arráez et al., 2015 in press).

It would also be useful to continue studying in depth the effect of the sex variable in social competence. It is not possible to draw conclusions from this study since there were initial differences between the boys and girls in the two groups. In future investigations it would be advisable to start with a bigger and more homogeneous sample and to analyze whether differences of sex are noticed, and if so, to establish when they appear. Likewise, and given that no differences were found within the experimental group at any of the evaluation times, it could be investigated whether the intervention program has a differential effect on this variable. *Aprender a Convivir* is not a program directed at driving co-education but it does work on basic aspects of social competence related to mutual assistance, cooperation and expressing emotions, from a perspective of equality. Research along these lines would be of great interest for improving the design of models for social competence interventions in the educational sphere.

Lastly, it is fundamental to study the effect of the *Aprender a Convivir* program in the long term. Currently, a tracking of diverse groups of pupils who participated in the program is being carried out, with the goal of discovering to what extent the effects of the program are being maintained. The long term follow-up measures are a fundamental indicator contributing to a guarantee of effectiveness of the intervention program and as such, are taken into account as criteria for inclusion in review and meta-analysis studies associated with early intervention programs on the social competence of infants (Durlak et al., 2011).

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Received date: 08-01-2015 Review date: 04-05-2015 Accepted date: 05-06-2015