

ADHD SYMPTOMS AND ITS ASSOCIATION WITH PROSOCIAL AND AGGRESSIVE BEHAVIOURS AT SCHOOL

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RESUMEN. Introducción: Un número de investigaciones cada vez mayor está centrando su objeto de análisis sobre el papel que las funciones ejecutivas y los problemas de externalización ejercen sobre las conductas prosociales y agresivas de niños y adolescentes (Bacchini, Affuso & Trotta, 2008). El objetivo de este estudio ha sido analizar la relación entre la prosocialidad y la agresividad y los síntomas de TDAH: hiperactividad, inatención e impulsividad. **Método:** Estudiantes de tercer ciclo de educación primaria y primer ciclo de educación secundaria (N = 1.853, 47,2% chicas) completaron una cuestionario para evaluar los niveles de prosocialidad y agresividad en el grupo de clase así como un cuestionario para medir los síntomas del TDAH. **Resultados:** Los análisis mostraron una asociación negativa entre la prosocialidad y los factores de los síntomas del trastorno, así como una relación positiva entre la agresividad y los mismos factores. **Conclusiones:** Los resultados mostraron resultados similares a estudios anteriores y destacan la necesidad de analizar con más detalle la influencia de variables neuropsicológicas como las funciones ejecutivas sobre las conductas sociales.

ABSTRACT. Background: A growing number of research are examining prosocial and aggressive behaviors of children and adolescents in the classroom and its relationship with executive functions and externalizing problems (Bacchini, Affuso & Trotta, 2008). The aim of this study was to analyze the relationship between prosociality and aggressiveness and ADHD symptoms: hyperactivity, inattention and impulsiveness. **Method:** Students in their last two years of primary and first two years of secondary school (N = 1,853, 47.2% girls) completed a questionnaire to assess the levels of prosociality and aggressiveness as well as a questionnaire to measure ADHD symptoms. **Findings:** The analyzes showed a negative association between the levels of prosocial behavior and the symptoms of the disorder as well as a positive relationship between aggressiveness and the same factors. **Conclusions:** Findings parallell previous studies and highlight the need to analyze in more detail the influence of neuropsychological variables such as the executive functions or attention on social behaviors.

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Introduction

An increasing number of research is currently dealing with the analysis of executive functions and their influence on prosocial behaviour in children and adolescents. A positive association between inhibitory control and prosocial behaviour has been found (Aguilar-Pardo, Martínez-Arias & Colmenares, 2013; Giannotta, Burk & Ciairano, 2011). Attentional processes have attracted less attention so far, however researchers are becoming more and more conscious that attention may have an important impact on the skills necessary for optimal peer interaction during childhood and adolescence. Wilson (2003), for example, has found a relation between prosocial behaviour and improved performance in tasks that require attention. On the other hand, children and adolescents who experience greater difficulties in the control of these executive functions often show externalizing problems. They are usually more aggressive, noisy, rule violating and intrusive and although they tend to be active this activity is not task oriented and to the observer they seem non-compliant (Hinshaw, Zupan, Simmel, Nigg & Melnick, 1997; Landau & Moore, 1991). Evidence from research also indicates that children with externalizing problems like ADHD can be affected in two ways regarding aggressiveness in classroom contexts. They are subjects to higher rates of victimization compared to children without ADHD, while others report that those with ADHD engage in bullying more often than children who are not suffering from the disorder (Bacchini, Affuso & Trotta, 2008; Kumpulainen, Rasanen & Puura, 2001; Taylor, Saylor, Twyman & Macias, 2010).

The main aim of this study has been the analysis of prosociality and aggressiveness in relation to ADHD and the hypotheses were:

H1: We expect to find lower scores in hyperactivity, inattention and impulsiveness when analysing the data obtained from prosocial students compared to the rest of students.

H2: We expect to find higher scores in hyperactivity, inattention and impulsiveness when analysing the data obtained from aggressive students compared to the rest of the students.

Method

Participants

Our sample is part of a larger project called Sociescuela whose objective is the prevention of school violence. In total, 1.853 students from 5 schools (two private and three public ones) participated in the research. The proportion of girls was 47.2 %. The mean age was 12.7. In relation to their educational level, 32,8% of the students came from primary school and 67,2 % from secondary school.

Materials

Prosocial behaviour and aggressiveness

A peer report questionnaire was employed. It included 4 questions which measure the level of children' prosocial behaviour (for example: Who are the classmates that help others?) ($\alpha=84$). In relation to each question, the number of nominations received was divided by the number of students who have answered and then the mean for the four questions was obtained. We considered those subjects who were superior to percentile 80 in relation to the general sample. In order to measure the level of aggressiveness we also used 4 questions through the employment of a peer report questionnaire (for example: Who are the mates that bother others?) with maximum of three nominations

for each question ($\alpha=89$). After the application of the same procedure as in the case of prosocial behaviour we considered those students who overcame percentile 80 in aggressiveness in comparison with the general sample.

ADHD

A self-report questionnaire which is part of a larger questionnaire for the detection of socioemotional difficulties in schools was employed. We used three subscales (37 items) to measure inattention (12 items, $\alpha=72$), hyperactivity (10 items, $\alpha=70$) and impulsiveness (9 items, $\alpha=82$).

Results

First of all, we performed a Pearson correlation analysis (table 1) among the different factors. It is important to stress the fact that we found a low but statistically significant relation between aggressiveness and hyperactivity, inattention and impulsiveness.

Table 1. *Pearson correlations between prosociality, aggressiveness and ADHD symptoms.*

Aggressiveness		
Prosociality		
,152**	-,035	Hyperactivity
,172**	-,055*	Inattention
,151**	-,055*	Impulsiveness

** . The correlation is significant at 0,01 level (bilateral).

* . The correlation is significant at 0,05 level (bilateral).

After that the sample was divided into two: the subject over percentile 80 in prosocial behaviour and the rest. We performed analysis of differences based on the contrast t of Student (table 2). When the variances were homogeneous, the degrees of freedom were $df = 1.853$, being the answer cases those of all the participants. When the variances were not homogeneous the degrees of freedom were shown in brackets. The analyses show significant differences in all the symptoms (hyperactivity, inattention and impulsiveness), with the prosocial group scoring lower in comparison with the rest of the students.

Table 2. *Descriptive statistics and t contrast of Student of the prosocial students in comparison with the rest of the students in hyperactivity, inattention and impulsiveness.*

T(df)	Standar deviation	Mean	N	Prosociality	
2,66** (596,5)	5,77	20,50	1482	No	Hyperactivity
	5,43	19,64	371	Yes	
4,44***	7,60	25,30	1482	No	Inattention
	6,98	23,37	371	Yes	
4,78*** (592,9)	5,58	21,66	1482	No	Impulsiveness
	5,30	20,17	371	Yes	

* p<0,05 ** p<0,01 *** p<0,001

Exactly the same procedure as the one used in the analysis of prosocial behaviour was used in the analysis of aggressiveness (table 3). We considered the subjects who overcame the centile 80 in aggressiveness and the contrast t of Student was applied between this group of students and the rest of the sample. We obtained significant results in all the symptoms (hyperactivity, inattention and impulsiveness), the aggressive students obtained higher scores in all of them in relation to the sample.

Table 3. *Descriptive statistics and t contrast of Student of the prosocial students in comparison with the rest of the students in hyperactivity, inattention and impulsiveness.*

T(df)	Standar Deviation	Mean	N	Aggressiveness	
-8,81***	5,38	19,75	1479	No	Hyperactivity
	6,38	22,62	374	Yes	
-4,94***	7,27	24,48	1479	No	Inattention
	8,22	26,62	374	Yes	
-8,42***	5,21	20,82	1479	No	Impulsiveness
	6,33	23,49	374	Yes	

* p<0,05 ** p<0,01 *** p<0,001

Conclusions

As it was expected, prosocial students obtained inferior results in comparison with the rest of the students in all the symptoms related to ADHD, in agreement with prior studies (Brammer & Lee, 2013) which show the existence of an inverse relationship between prosocial behaviour and ADHD. On the other hand, the results

obtained in the present study show higher scores in all the ADHD symptoms in aggressive students, when compared to the rest of the sample, which is in agreement with previous studies (Bacchini, Affuso & Trotta, 2008).

Future lines of investigation should focus on a more detailed analysis of the difficulties related to the attentional processes which contribute to the ADHD disorder, and more specifically on their relation with social interaction skills.

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