

EXTRACURRICULAR ACTIVITIES AND SOCIAL REJECTION OF CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER

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Abstract. Children with attention deficit/hyperactivity disorder are more often rejected by their peers than typically developing children. However, some children may not experience social rejection. The protective effect of extracurricular activity against social rejection has been evidenced for children in common school sample but it is unclear in relation to children with ADHD. This study investigated the effects of extracurricular activity on the social rejection of children with ADHD ($n = 108$) in comparison with typically developing peers. Results showed that extracurricular activities had a statistically significant effect and negatively predicted social rejection. Structured activities had higher effects on rejection than unstructured activities in both groups. Social extracurricular activities had higher effects on rejection in children with ADHD than in comparison group. These findings have helped to enhance understanding of the social functioning of children with ADHD and promote a strength-based approach in terms of prevention and intervention of the social rejection of children with ADHD in school.

Keywords: attention deficit/hyperactivity disorder, social functioning, social rejection, extracurricular activity, structured activities, unstructured activities.

Introduction. Attention deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder with a worldwide prevalence of 5% among children. ADHD symptoms are inattention and hyperactivity/impulsivity that interfere with children's functioning and development [APA, 2013].

Children with ADHD experience considerable impairment of social functioning. There are three main components of social functioning impairment in children with ADHD: poor social skills; deficiency in social-information processing; and peer impairment [Ros & Graziano, 2017]. Social rejection by peers is one of the forms peer impairment that is a consequence of the effects of the deficit in social skills and social cognition. Children with ADHD are more likely to be rejected by peers than typically developing children; but some children maintain a positive peer relationship. For instance, about half of the children were not rejected in the study by Hoza et al. (2005); and 5% even had "popular" social status.

Extracurricular activity is an enhancer of the well-being of children with ADHD, namely, a program of physical activities reduced ADHD symptoms [Hoza et al., 2014; Verret et al., 2012]; improved the level of information processing [Verret et al., 2012]; and decreased the levels of anxiety or depression symptoms [Kiluk et al, 2009].

Extracurricular activity is also related to the social functioning of children with ADHD. Extracurricular activity is an additional setting for the development of social skills [Gilligan, 2001]. DeDowell and Parke (2009) found that extracurricular activities improved the social skills of children and consequently their social acceptance by their peers in common school samples. In other words, this study provided evidence of the effect of an extracurricular activity that reduced two components of impairment (social skills and peer rejection).

Regarding to children with ADHD, Ray et al. (2017) identified the protective compensatory effect of activity participation: the breadth and intensity of after-school activities improved the social skills of children in the presence of conduct problems, depression, and negative parenting. However, the effect of extracurricular activities on the social rejection of children with ADHD remains unknown.

There are two types of extracurricular activity: structured and unstructured. Structured activities are organized meetings (e.g. lessons, events and other) that involve a set of rules and behavioral norms. Unstructured activity is peer-driven and less formalized (e.g. free play, sports and creative hobbies, visiting the swimming pool, helping peers) [Brooks et al, 2014].

There are contradictory research results about the effects of structured and unstructured activities on the social functioning of children. Typically developing children (aged 6 to 11) participating in structured activities (sports team and clubs) had higher social skills index scores compared with their peers who did not participate in outside-school activities [Howie et al., 2010]. However, Brooks et al. (2014) found that

unstructured activities associated more strongly with higher levels of social competence for children with specific learning disabilities ($n = 53$, aged 8 to 11) than structured activities. They argued that participation in unstructured activities is more appropriate for children with specific learning disabilities; this activity provides more flexibility in social behavior. Unstructured activities are centered on a social relationship while structured activities focused on competing with others peers [Brooks et al, 2014]. It is unclear what type of extracurricular activity has a stronger effect on social functioning of children with ADHD.

Extracurricular activity also differs in content: for instance, sport, art and other creative activities. Most research has focused on the effects of physical activities on the social functioning of children with ADHD. Hoza et al. (2014) provided evidence for the positive effects of physical activities on the social functioning of elementary school students with ADHD (aged 4 to 8) as well as typically developing children. Parents reported overall reductions in problematic peer functioning (behavior with peers and peer reputation) after a physical intervention program. However, there are other types of extracurricular activities. Gilligan (2000) identified five areas of spare time that are useful for increase resilience of children: cultural pursuits; the care of animals; sport; helping and volunteering; and part-time work. The effects of social (care, helping, volunteering) and creative activities (music lessons, art club etc.) on the social functioning of children with ADHD thus remain unknown.

Some research has explored the impact of group and individual extracurricular activities. Perron-Gélinasa, Brendgen and Vitaro (2017) found that team sport mitigated the association between depressive symptoms and increased peer rejection in boys in a common school sample but individual sports exacerbated this relationship. Children who spent more time in team sports reported higher self-esteem [Slutzky, 2009], and had lower social anxiety [Schumacher & Dimech, 2011] than children who participated in an individual sport. Differences in the impact of group and individual activities on the social status of children with ADHD remain unclear.

The present study therefore examined *two research questions*: (1) Will extracurricular activities predict the social rejection of children with ADHD as well as non-ADHD children? (2) What type of extracurricular activity (structured or unstructured; sport, creative or social; group or individual) has a stronger effect on the social rejection of children with ADHD and non-ADHD children?

The aim of this study was to examine the main effect of extracurricular activities and their types on social rejection of children with ADHD in comparison with typically developing children.

Method. Participants.

The present study was a part of a cross-sectional survey conducted from January to September 2019 that evaluated the risk and protective factors of peer rejection of children with ADHD in comparison groups.

The participants were 108 children aged 7 to 12 ($MS = 9.4$; $SD = 1.56$; 96% boys) with clinically diagnosed ADHD according to International Statistical Classification of Diseases and Related Health Problems by neurologists. The comparison group included their classmates ($n=108$). The children were students of primary public schools in Almaty (1-4 grades). Most children were from dual- (74%) or single-parent families (22.6%).

Most parents were females (91.6%) in the age range 36 to 40 (41.8%) with full-time job (68.5%), college and university graduates (42%), and average family income equal to 416 USD (68%) or more.

We recruited participants through schools, using the experience of the Family and Group Practice Research Centre (Ma et al., 2017). We invited parents to participate in two-hour psycho-educational talks, and suggested that they join the present study.

The comparison group was selected in several steps. First, we selected children who had the same sex and age as children with ADHD (324 children). Second, we excluded children with diagnosed CD, ODD, ASD (3 children). Third, we randomly selected children using the lottery method. In 12 cases the random procedure was replicated because the parents refused to participate in this study.

Parents of both groups have given written consent to participate in the present study and collect data from their children.

The Local Ethics Committee of the al-Farabi Kazakh National University granted ethical approval for our research.

Measures.

Sociometric Procedure.

Peer rejection was measured by a standard sociometric procedure (Coie et al., 1982): children were asked to name three classmates whom they *like the most* and *like the least*. In this study, limited nominations were used because unlimited nominations did not have strong advantages in an

elementary school (Cillessen, 2009), and fixed nominations made the procedure less time-consuming. We calculated the numbers of positive and negative nominations that reflected the extent of peer acceptance and rejection. Given the importance of adjusting for group size effects in the evaluation of social status by sociometrics (Cillessen, 2009), we standardized scores within the group. This method allows to assess child's rejection depending on peer relationships in the classroom that is an important part of the social context of social functioning of children with ADHD (Mikami & Normand, 2015).

Extracurricular Activity Scale (EAS)

EAS was developed by the authors. The structure of the scale was based on two main properties of a child's activity, (a) breadth and (b) intensity (Ray et al., 2017); and types of activities (Brooks, 2014). The structure of the scale is shown in figure 1. EAS consists of three subscales: sport, creative, and social activity. Each subscale includes three items. Parents evaluate how regularly their child participates in a certain activity (e.g. How often does your child participate in team sport: football, hockey, basketball, rowing, etc.) using a 4-point Likert scale from 1 (never) to 4 (always). The overall extracurricular activity was calculated as average scores of 9 items. The types of activities were calculated as average scores of relevant items. Higher scores denote greater activity of children during out-of-school time. The internal consistency was satisfactory: EAQ-overall, 0.71; sport activity, 0.68; creative activity, 0.74; social activity, 0.71.

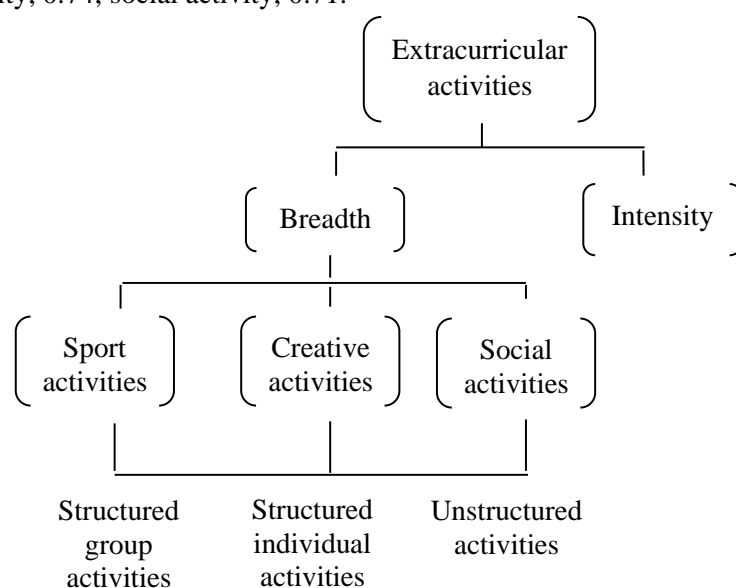


Fig. 1. Structure of Questionnaire of Extracurricular Activity

Data analysis.

The data were analyzed using IBM Statistics SPSS 25 software. Descriptive statistical analysis was carried out by calculating the percentage, average and standard deviation in both groups. An independent t-test was conducted in order to investigate whether there were significant differences in variables between the groups of children with and without ADHD. The Pearson correlation coefficient was calculated to explore the relationship between social rejection and extracurricular activity. Standard linear regression was conducted in order to evaluate the effect of overall extracurricular activity in predicting social rejection. Stepwise multiple linear regressions were applied to estimate the effects of types of extracurricular activity on social rejection. Regression analysis was separately conducted for (1) overall activity; (2) structured and unstructured activities; (3) sport, creative and social activities; (4) individual and group structured activities.

Results.

Descriptive Analyses.

Children with ADHD had lower overall extracurricular activity scores ($t = -3,43, p <0,01$) as well as all types of activities than children of the comparison group. Likewise, children with ADHD had a higher social rejection index ($t = 8,43, p <,001$) than the typically developing children. All differences were statistically significant (see Table 1).

Table 1. Comparison of children with and without ADHD on variables

Variables	With ADHD (n=108)		Without ADHD (n=108)		t	Sig (2-tailed)
	M	SD	M	SD		
Social Rejection Index	0,80	0,93	-0,15	0,71	8,43	0,000
Structured Activity	1,49	0,38	1,66	0,36	-3,39	0,001
Unstructured Activity	1,70	0,56	1,88	0,53	-2,57	0,019
Sport Activity	1,75	0,65	1,96	0,61	-2,41	0,016
Creative Activity	1,47	0,55	1,65	0,59	-2,28	0,023
Social Activity	1,46	0,49	1,59	0,46	-2,02	0,044
Group Activity	1,42	0,46	1,61	0,44	-3,07	0,002
Individual Activity	1,56	0,45	1,72	0,43	-2,54	0,012
Overall Activity	1,52	0,35	1,68	0,32	-3,43	0,001

Sport activity scores were higher than the creative and social activities scores in both groups (M = 1,75, children with ADHD; M = 1,96, children without ADHD). Children of both groups had higher unstructured activity scores (M = 1,70, children with ADHD; M = 1,88, children without ADHD). The levels of individual activities were higher (M = 1,56, children with ADHD; M = 1,72, children without ADHD) than the levels of group activities in children with and without ADHD.

The correlation between social rejection and types of activity were statistically significant in both groups. These correlation coefficients were negative and medium-sized (see Table 2). Hence, children with higher extracurricular activity levels had a lower level of social rejection. There was an insignificant correlation between sports activity and creative activity in children with ADHD and in the comparison group.

Table 2. Intercorrelations for variables in children with and without ADHD

Variables	1	2	3	4	5	6	7	8
1 Social Rejection Index	1	-0,67**	-0,65**	-0,45**	-0,55**	-0,56**	-0,56**	-0,55**
2 Structured Activity	-0,68**	1	0,65**	0,61**	0,61**	0,72**	0,83**	0,82**
3 Unstructured Activity	-0,67**	0,65**	1	0,62**	0,62**	0,63**	0,50**	0,59**
4 Sport Activity	-0,57**	0,56**	0,62**	1	0,11	0,30**	0,54**	0,58**
5 Creative Activity	-0,45**	0,65**	0,63**	0,06	1	0,38**	0,46**	0,55**
6 Social Activity	-0,50**	0,72**	0,53**	0,19*	0,38**	1	0,63**	0,56**
7 Group Activity	-0,59**	0,83**	0,53**	0,46**	0,52**	0,63**	1	0,39**
8 Individual Activity	-0,54**	0,82**	0,55**	0,48**	0,56**	0,56**	0,38**	1

Note. Intercorrelations for children with ADHD (n = 108) are presented above the diagonal, and intercorrelations for children without ADHD (n = 108) are presented below the diagonal.

*p<.05 **p<.01

The coefficients of intercorrelations were within high tolerance coefficients 0.5 and 0.6 (Tabachnick, Fidell, 2001) except the association of structured activities with the social, group and individual activities but these types were included in different regression analyses. Thus, multicollinearity assumptions of multiple linear regression were met for all variables.

Extracurricular activities in Predicting Social Rejection

The overall extracurricular activity explained 42% of the variance in social rejection of children with ADHD, and 35% in typically developing children (see Figure 2). The results of regression analyses with the structured and unstructured activities displayed that these variables explained 53% of the variance in social rejection of children with ADHD, and 56% in the comparison group. The largest share of rejection variation was accounted for the structured activity in both groups. However, unstructured activities were also statistically negative effects on social rejection. The regression analyses with the sport, creative, and social activities showed that these variables explained 54% of the variance in social rejection of children with ADHD, and 57% in typically developing children. Group and individual activities predicted a similar variance of dependent variables (see Figure 2).

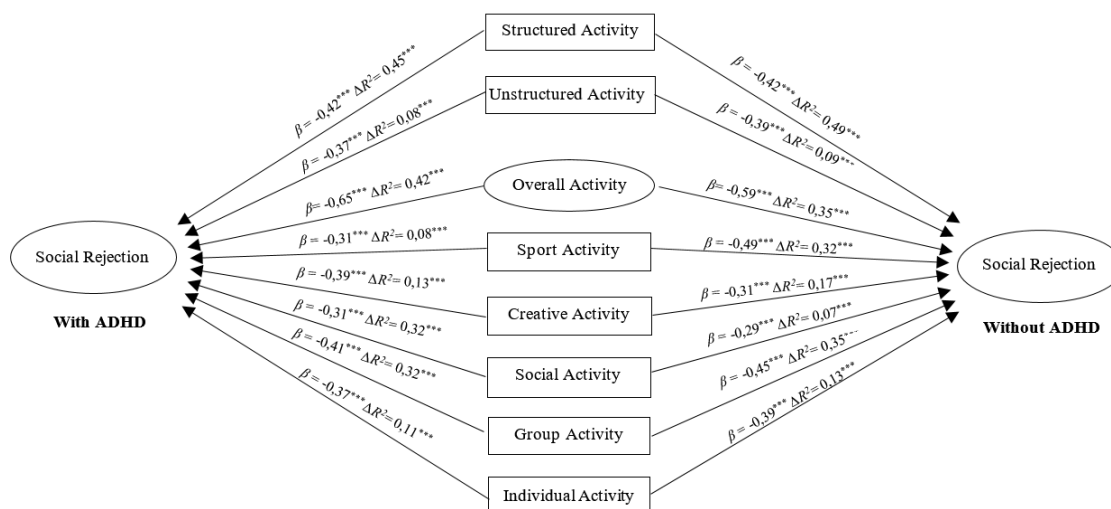


Fig. 2. Relationship between activity and social rejection

The effects of social activities significantly differed in groups: it explained 32% of the variation of social rejection in children with ADHD and only 7% in the children of the comparison group. However, these effects were similar and statistically significant in both groups ($\beta = -.31$, $p < 0,001$, children with ADHD; $\beta = -.29$, $p < 0,001$, children without ADHD). Whereas, the effect of sport activity was higher in typically developing children ($\Delta R^2 = 0,32$, $\beta = -.49$, $p < 0,001$) than children with disorder ($\Delta R^2 = 0,08$, $\beta = -.31$, $p < 0,001$). The effect of creative activity on social rejection was almost similar. The largest share of rejection variation was accounted for by group activities (32% in children with ADHD; 35% in children without ADHD)

Discussion.

These findings confirm the previous study [Hoza et al., 2005]: children with ADHD have higher levels of social rejection than their typically developing children while they have lower levels of extracurricular activities. Children more often participate in sport and unstructured activities than in other types of activities in both groups.

The results of standard linear regression display the statistically significant effects of extracurricular activities on social rejection; a child’s activity negatively predicted the rejection of children by peers. Hence, higher levels of extracurricular activities are associated with lower social rejection. These findings correspond with the previous study that found the protective effects of activities in the predicted social skills of children with ADHD [Ray et al., 2017].

Children have higher levels of unstructured activity. However, structured activities have stronger effects on the social status of children with and without ADHD. These findings are contrary to the study Brooks et al. (2014); but it is important that the depended variable was social competence which differs from social status. On the other hand, the results of the present study corresponded with other study. Lopez-Williams et al. (2005) found that athletic performance of children with ADHD (aged 6 to 12) accounted for a portion of unique variance in the number of positive peer nominations approximately equal to negative (i.e., rule violations, negative verbalizations, conduct behavior) and positive (i.e., sharing with a peer, helping a Peer) behavior combined. These findings highlight the significant “visibility” activities for peer acceptance and rejection. Moreover, structured activities promote to strengthening of the network with prosocial peers which can be a part of a social network of children with ADHD. It could also be an explanation for the stronger effect of social activities on the social rejection of children with ADHD.

Sport and creative activities also have statistically significant effects on rejection. These results are contrary to the study of Mitchell et al. (2016) where researchers received unexpected results: moderate and high levels of total physical activity exacerbated the association between symptoms of ADHD and subsequent increases in physical victimization. They argued that “lack of athletic performance demonstrated while engaging in physical activity might make children with ADHD symptoms more likely to be victimized” [Mitchell et al., 2016, p.]. Perhaps these findings can

be explained that victimization was measured by self-reports while children with ADHD overestimate their competence particularly in social functioning [Hoza et al., 2004]. The effect of group activity is higher than the effect of individual activity in both groups. Participation in group activities is related to opportunities for social practice and the development of social skills.

The results of the present study highlight the significance of promotion and encouragement of hobbies and interests in the prevention and intervention of social rejection of children with ADHD. Extracurricular activities can be "one favourable experience may be a turning point in a child's or young person's trajectory of development" [Gilligan, 2000, p.39]. Moreover, this study promotes a strengths perspective in understanding and assisting children with ADHD in school.

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