



EMOTIONAL INTELLIGENCE IN CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT HIPERACTIVITY DISORDER

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Abstract

Today there is minimal scientific literature that examines whether people diagnosed with attention deficit hyperactivity disorder (ADHD) have lower emotional intelligence (EI) than other subjects without this type of pathology. The main objective of the study is to compare EI, defined according to the theoretical Bar-On model, in a group of children and adolescents with ADHD versus a control group. The sample is made up of 72 subjects (59.7% men and 40.3% women) with ages between 7 and 17 years ($M = 11.85$; $SD = 2.97$): 32 patients diagnosed with ADHD who went to a Child-Youth Mental Health Unit, and 40 subjects who functioned as a control group and presented the same sociodemographic characteristics of the study sample. All of them completed Bar-On and Parker's Emotional Quotient Inventory Youth Version (EQ-i: YV). The results indicated that there are significant differences between ADHD group and control group ($t_{(gl)} = -3.46_{(70)}$; $p < .01$). Children and adolescents with ADHD presented lower scores in interpersonal skills ($t_{(gl)} = -3.27_{(70)}$; $p < .01$) and adaptability ($t_{(gl)} = -3.58_{(70)}$; $p < .01$). These data suggest the need to promote the development of EI skills in patients diagnosed with ADHD, as well as to carry out interventions related to EI from an early age with a preventive character in the school environment.

Keywords: attention deficit hyperactivity disorder, emotional intelligence, children, adolescents.

1. INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a disorder characterized by symptoms of inattention and/or hyperactivity/impulsivity. It is one of the neurobiological disorders with the highest prevalence in the infant-juvenile population (Polanczyk et al., 2015). The global prevalence of this disorder in Spain is estimated at around 6.8%, being higher in men than in women (González Collantes et al., 2015). This disorder also has three variants: predominant presentation with

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inattention, hyperactive/impulsive and combined, according to DSM-5 criteria (American Psychiatric Association, 2013).

The patients diagnosed with ADHD, in addition to presenting the diagnostic criteria collected in the different manuals (cite DSM-5) and which are fundamentally related to executive functions and motor disorders (Silverstein et al., 2020), present other difficulties that cause a great impact in the different areas of operation of the minor and in different contexts. One of these difficulties would be the low ability of these children to approach and modulate their emotions with a certain purpose (Quintero et al., 2017).

From this point of view, we consider that emotional intelligence (EI) could be a good theoretical framework to advance in this area of knowledge. EI encompasses observable abilities - EI ability - (Mayer et al., 2008) and subjective self-perceptions - EI trait - (Petrides & Furnham, 2001). On the one hand, the Mayer and Salovey (2001) model describes EI as a set of skills such as perception, use, understanding and emotional management. On the other hand, the theoretical model of Bar-On (Bar-On & Parker, 2000) defend the combination of mental abilities with other competences that are acquired through experience. It defines EI as a set of emotional, personal and interpersonal capacities that influence the total capacity of the individual to face their demands and the pressures of the environment. They explain EI in five dimensions: self-awareness, interpersonal relationships, adaptation to the environment, stress management, and general mood. Thus, EI is an important factor in determining the capacity for success in life and directly influences emotional well-being. According to this model, “emotionally intelligent people are capable of recognizing and expressing their own emotions, possess positive self-esteem, and are able to update their skill potential and lead happy lives. Likewise, they have great facility to understand the way in which others feel and to maintain satisfactory interpersonal relationships, without depending on others. They are optimistic, flexible, realistic and successful people solving problems and dealing with stress without losing control” (Bar-On, 1997, pp. 155-156). This will be the theoretical framework on which this study is based.

EI increases with age until the beginning of adulthood (Kong et al., 2017), and is generally higher in women than in men (Goldenberg et al., 2006). However, there are studies that report higher EI in men (Kong et al., 2017) or do not report gender differences (Barahona & Alegre, 2016; Elella et al., 2017).

Although it is assumed that people with ADHD have marked difficulties in controlling and expressing their emotions, the truth is that there is little scientific literature regarding the relationship between ADHD and EI in children and adolescents (Yapça & Taman, 2019), and that there is inconsistent. Conducting a literature review on the subject, previous population studies indicate that the EI trait turned out to be a moderate to strong predictor of ADHD symptoms in a study conducted with a community sample of adolescents and young adults (Kristensen et al. 2014). The stress management and adaptability dimensions uniquely predicted

both inattention, hyperactivity and impulsivity. Craparo et al. (2015) concluded that the group of early adolescents with symptoms of inattention presented lower levels of total EI, adaptability and general mood. Regarding the studies with clinical population in children and adolescents, taking into account the theoretical model of Bar-On, Barahona and Alegre (2016) found that adolescent students diagnosed with ADHD presented a greater intrapersonal capacity and a positive impression than those without ADHD; not finding differences in the other dimensions of EI. Climie et al. (2017), reported that children with ADHD obtained lower scores in emotional understanding and in the interpersonal and adaptation subscales.

Therefore, today there is little scientific evidence that confirms or discards that children and adolescents affected by ADHD have a lower EI. We consider that the confirmation of this hypothesis would highlight the need to apply more specific therapeutic interventions directed towards all those aspects that make up EI and that could ultimately facilitate better socio-emotional adaptation and a better prognosis of the disorder. In this way, new therapeutic strategies could be implemented that are perfectly compatible with those already known and that have demonstrated efficacy such as pharmacological treatment (Boland et al., 2020) or cognitive behavioral therapy (Knouse et al., 2017).

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

The main objective of this study is to compare EI, defined according to the theoretical Bar-On model, in a group of children and adolescents with ADHD versus a control group.

2.2. HYPOTHESES

Children and adolescents with ADHD have less EI than children and adolescents without ADHD.

3. METHOD

3.1. PARTICIPANTS

The total sample consisted of 72 subjects aged between 7 and 17 years ($M = 11.85$; $SD = 2.97$), living in the same Spanish region. 59.7% (43/72) of the sample were boys and 40.3% (29/72) girls.

The clinical sample was made up of 32 patients (44.4% of the total sample) who attended on an outpatient Child-Youth Mental Health Unit, belonging to the public health service, in a region of Spain. The mean age of the control group was 10.88 ($SD = 2.52$). 21.9% (7/32) were girls and 78.1% (25/32) boys. 71.9% (23/32)

were children (from 7 to 12 years old) and 28.1% (9/32) were adolescents (from 13 to 18 years old).

The control group was composed by 40 students (56.6% of the total sample) who attended a public school located in the same region as the Child-Youth Mental Health Unit. They were studying from 4th of Primary School to 1st of Bachelor. The mean age of the control group was 12.62 ($SD = 3.11$). 55% (22/40) were girls and 45% (18/40) boys. 50% (20/40) were children (from 7 to 12 years old) and the other 50% (20/40) were adolescents (from 13 to 18 years old).

3.2. INSTRUMENTS

As a psychometric evaluation instrument, we used the Emotional Quotient Inventory Youth Version (EQ-i: YV) by Bar-On and Parker (2018). Adapted to the Spanish population by Bermejo García et al. (Bar-On & Parker, 2018). The inventory is specifically designed for children and teens ages 6 to 18. It consists of 60 statements on a 4-point polytomous scale (1 = never happens to 4 = always happens to me). It evaluates the total emotional intelligence from four scales: intrapersonal (self-knowledge and emotional self-expression of the evaluated person); interpersonal (social awareness and interpersonal relationship, ability to have satisfactory relationships with other people); adaptability (ability to manage change, flexibility and effectiveness to resolve conflicts), and stress management (ability to manage and self-regulate emotions in stressful situations). It also adds 3 scales: general mood (ability to have a positive attitude towards life), positive impression (excessively favourable perception of the person about herself) and inconsistency (discrepancy in responses to similar items). The Spanish version of the questionnaire has an adequate internal structure and reliability (Cronbach's $\alpha = 0.77 - 0.86$) (Sáinz-Gómez et al., 2014).

3.3. PROCEDURE

To select the clinical sample, the following inclusion and exclusion criteria were previously established: 1) meet the diagnostic criteria for ADHD according to DSM-5 (American Psychiatric Association, 2013), 2) be between the ages of 7 and 17 years, 3) receive psychological/psychiatric treatment in the Infant-Juvenile Mental Health Unit during the last 6 months, 4) not show a comorbid psychiatric diagnosis, and 5) not present a limit intelligence or intellectual disability. The clinical sample was obtained by consecutive attendees. The diagnosis was established by the clinical psychologist and/or psychiatrist of the Unit, through clinical interviews with the patient, the parents or caregivers of the patient, and obtaining the appropriate school information, from the centres or activities that they deemed appropriate. The clinical psychologist or psychiatrist was in charge of providing the study information

and obtaining informed consent signed by parents or caregivers of the children and adolescents.

Regarding the control group, the selection of the public school in the same Spanish region was carried out randomly. After obtaining the authorization of the directors, the school counsellor was in charge of explaining and providing the study information and their willingness to participate in it. The following inclusion and exclusion criteria were followed: 1) students who attended academic courses between 4th Primary and 1st Bachelor and 2) who had not received any psychiatric diagnosis throughout their lives and who did not go to any Health Unit Mental child-youth or private psychological/psychiatric centre. The parents or caregivers of the participants signed the informed consent, before the students completed the inventory.

The results of the inventory together with the information pertinent to the diagnosis, sex, age and school, were collected by assigning a code to each patient so that the confidentiality of the information and their anonymity were fully guaranteed. All the information obtained was processed in accordance with the provisions of Organic Law 3/2018, of December 5, on the Protection of Personal Data and guarantee of digital rights.

3.4. STATISTICAL ANALYSIS

The data were processed using the statistical package for Windows Statistical Package for the Social Sciences (SPSS), version 19. Descriptive statistics and a multiple Student *t* test were performed to determine possible differences between groups. A statistical significance limit of $p < .05$ was used for all statistical analyzes.

4. RESULTS

First, a descriptive analysis was performed, obtaining the means and standard deviations of both groups for the overall EI score and for each of its dimensions (interpersonal and intrapersonal ability, adaptability and stress management). Next, a multiple Student *t* test were determined between both groups (ADHD group vs. control group). As observed in Table 1, there are statistically significant differences between the two groups in interpersonal ability ($t_{(gl)} = -3.27_{(70)}$; $p < .01$), adaptability ($t_{(gl)} = -3.58_{(70)}$; $p < .01$) and total EI ($t_{(gl)} = -3.46_{(70)}$; $p < .01$). See Table 1.

Table 1
Descriptives of EQ-i: YV scores and comparisons between groups

EQ-i: YV scale	CONTROL GROUP	ADHD GROUP	$t_{(gl)}$
	<i>M (SD)</i>	<i>M (SD)</i>	
Interpersonal skill	39.05 (3.91)	35.78 (4.58)	-3.27 ₍₇₀₎ **

Intrapersonal skill	13.83 (3.22)	14.25 (4.69)	.46 ₍₇₀₎
Adaptability	29.65 (4.41)	25.03 (6.51)	-3.58 ₍₇₀₎ **
Stress management	28.50 (4.86)	30.68 (5.45)	-1.77 ₍₇₀₎
EI Total	147.75 (17.02)	160.40 (14.00)	-3.46 ₍₇₀₎ **

Note. EQ-i: YV = Emotional Quotient Inventory Youth Version; ADHD = Attention Deficit Hyperactive Disorder.

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

5. DISCUSSION AND CONCLUSIONS

The main objective of the study was to compare EI, defined according to the theoretical Bar-On model, in a group of children and adolescents with ADHD versus a control group. The results indicate that the starting hypothesis is fulfilled, since children and adolescents with ADHD show lower total IE than the control group. They present less interpersonal capacity and adaptability than their peers without ADHD. These findings are in line with the previous study by Climie et al. (2017), and against the investigation of Barahona and Alegre (2016).

Following Barkley (2005), children with ADHD are expected to have high emotional impulsivity; that is, they present their primary emotions more quickly and with great difficulty in inhibiting them. This explains, among other things, that their emotional expression is more intense and maladaptive compared to the rest of the children. With the same level of development, children with ADHD express more primitive and immature emotions, being equally extensive for positive and negative emotions (Barkley, 1999), so that the latter interfere to a greater degree in the interpersonal sphere and in their ability adaptation to the environment.

Among the limitations of the study, it should be noted that we have used non-probability sampling when selecting the sample, so that not all members of the population have the opportunity to participate in the study. It is also necessary to refer to the disproportionate number of women and men in the ADHD group (78.1% boys vs. 21.9% girls). Another limitation would correspond to the time of applying an inventory (EQ-i: YV), whose estimated completion time is close to 30 minutes, for children and adolescents with ADHD. Factors such as fatigue, lack of motivation, or lack of understanding of the statements can generate erroneous or false interpretations. We do not rule out that the same may have occurred in our case taking into account that it has been applied to subjects with an impulsiveness and inattention component. However, far from saving these possible errors, we believe that they are part of the intrinsic characteristics of the evaluation of children and adolescents with ADHD. And finally, comment that we did not take into account the ADHD subtypes (predominant presentation with inattention, hyperactive/impulsive and combined) that the study participants had.

One of the future lines of research would be to determine if there are differences depending on the ADHD subtype in terms of IE. Previous studies such as that of Kristensen et al. (2014) suggest discrepancies between the different subtypes and their relationship with EI, such as that adaptability is more significantly correlated with inattention than with hyperactivity symptoms. And that impulsiveness and hyperactivity traits can affect reduced interpersonal capacity and adaptability. Furthermore, Elella et al. (2017) propose that the combined subtype shows the lowest scores in emotional management, regulation and repair. Another line of research could be to find out if these differences are maintained over time, for example, by conducting longitudinal studies of children and adolescents with ADHD. Or by replicating this same study in clinical samples from adults with ADHD.

In conclusion we can say that the findings of this study reveal that ADHD patients, regardless of their presentation, have a lower EI than subjects without this pathology. Subjects affected with ADHD have a lower ability in interpersonal relationships and a lower ability to adapt to the environment compared to their peers. These data highlight the need to promote the development of certain EI skills and competencies in patients diagnosed with ADHD using specific therapeutic strategies perfectly compatible with those already validated and which have demonstrated therapeutic efficacy. They also highlight the need to implement interventions that are aimed at promoting adequate EI from an early age and in the different contexts in which the child is involved, including the school environment.

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