

## ADD symptoms, self-image and emotional intelligence in early adolescence

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### Abstract

*Introduction: Attention-Deficit/Hyperactivity Disorder (ADHD) is a developmental disorder which affects around 3%-7% of school-aged children, more often boys than girls. The present research aims to explore the relationship between ADD symptoms, Emotional Intelligence and Self-Image and how different levels of ADD affect emotional intelligence and self-perception.*

*Method: We administered to a total of 370 young adolescents (girls = 203, boys = 167) with an age range of 12 years to 16 years (mean = 13; standard deviation = .59), the following self-reports: SIE - Self-Image Evaluation; EQ-i: YV - Emotional Quotient Inventory: Youth Version; Brown ADD Scales - Brown Attention-Deficit Disorder Scales.*

*Results: deficits in emotional intelligence were associated with a negative evaluation of self-image in adolescents who scored higher on the Brown ADD Scales.*

*Received: June 6, 2014; Revised: March 20, 2015; Accepted: June 29, 2015*  
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*Discussion: the group with ADD symptoms presented low levels of adaptability and lower scores in general mood, overall scoring lower on the EQ-i: YV compared to the group without ADD symptoms.*

*Keywords: ADD; Emotional intelligence; Self-image; Adolescence.*

## 1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a developmental disorder made up of three subclasses: ADHD Proper (Combined Type), Predominantly Hyperactive Impulsive Type, and Predominantly Inattentive Type. It affects around 3%-7% of school-aged children (APA, 2013), more often boys than girls. ADHD is generally diagnosed according to criteria found in the Diagnostic and Statistical Manual, Fifth Edition which require the presence of six or more items that must be characterized by inattention and/or hyperactivity and impulsivity. Impairment must be present in at least two settings (e.g. with friends or relatives, at home, school, etc.). Once the disorder has been diagnosed in children, it can continue through adolescence and into adulthood (e.g. Barkley, Murphy, & Fischer, 2008). Furthermore, ADHD is associated with impairments in the domain of psychosocial functioning. Adolescents with ADHD are often considered differently from their peers who do not have the issues related to the disorder (Hampton, Passanisi, & Jonsson, 2011) and, as a result, they experience low quality of life (QoL) and low self-esteem (Passanisi, Leanza, & Leanza, 2013; Leanza, Passanisi, & Leanza, 2013; Craparo, Magnano, & Faraci, 2014) which has been shown to be associated with a number of concepts such as self-confidence, self-depreciation and self-image. According to Rogers (1951), self-image is defined as “an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perception of one’s characteristics and abilities; the precepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as associated with experiences and objects; and goals and ideals which are perceived as having a positive or negative valence.” (Rogers, 1951, p. 136). A growing body of research highlights the importance of self-image in healthy psychological functioning (Mann, Hosman, Schaalma, & de Vries, 2004), which is theorized to be shaped by the child-caregiver relationship. Thus, children raised in a loving environment will likely have a more positive self-image than those reared in abusive or dysfunctional families. Caregivers who respond appropriately and recognize the child’s need for security foster a view of the self as worthy and a view of others as trustworthy and caring (Bowlby, 1973). Insecure attachment, which is linked to dysfunctional attitudes, such as problematic internet use, may contribute to the development of psychopathic personality traits and are found to be associated with experiences of bullying others (Craparo, Faraci, Fasciano, Carrubba, & Gori, 2013; Craparo, Faraci,

Rotondo, & Gori, 2013; Schimmenti, Passanisi, Gervasi, Manzella, & Famà, 2013; Schimmenti, Passanisi, Pace, Manzella, Di Carlo, & Caretti, 2014). Furthermore, insecure children are more likely to be diagnosed with ADHD (Clarke, Ungerer, Chahoud, Johnson, & Stiefel, 2002). This is due to the anxiety experienced by children with insecure attachment styles which affects the ability to control attention, memory, problem-solving, executive functions, and increases task-irrelevant thoughts (e.g. Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1994). On the contrary, secure children tend to have longer attention spans and better cognitive test performance (Frankel & Bates, 1990; Moss & St-Laurent, 2001).

Furthermore, children with ADHD often show intense and unpredictable behavior as they experience impairments in emotion processing, ranging from the expression of emotion to the perception of emotional states in others (i.e. Martel, 2009). In light of this evidence, there has been a growing consensus that emotion-processing deficits are an important characteristic of ADHD (Barkley, 2010). The multi-dimensional construct of emotional intelligence (EI) can provide a useful tool aimed at systematizing this emerging research topic. EI includes both observable abilities (ability-EI; Mayer, Salovey, & Caruso, 2008) and subjective self-perceptions (trait-EI; Petrides & Furnham, 2001). In particular, trait-EI is defined as a constellation of self-perceptions placed at the lower levels of personality hierarchies (Petrides, Pita, & Kokkinaki, 2007), whereas ability-EI is defined as “the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others” (Mayer & Salovey, 1997). Correlations between measures of trait-EI and ability-EI are low, supporting the distinction between them (Craparo *et al.*, 2014; Brannick, Wahi, Arce, & Johnson, 2009). The former belongs within the domain of personality, whereas the latter (at least theoretically) belongs within the realm of cognitive ability. The distinction between trait EI and ability EI is predicated on the method used to measure the construct (respectively self-reports and performance-based measures) and not on the difference between mixed and ability models of EI (Mayer, Salovey, & Caruso, 2000), which is based on whether or not a theoretical model mixes cognitive abilities and personality traits. Mixed models of EI (e.g. Bar-On, 1997) have been identified as those that define EI as a mixture of emotion-related competencies, personality traits and dispositions. Self-report measures pertaining to mixed models (e.g. the Bar-On Emotional Quotient Inventory, Bar-On EQ-i; Bar-On, 1997) have been described as embedded within the personality framework, thus have been used to

measure Trait EI. Maximum - performance tests for the assessment of ability EI are difficult to be developed (Matthews, Zeidner, & Roberts, 2007; Robinson & Clore, 2002) because of the inability to create items or tasks that can be scored according to objective criteria and that can operationalize the broad domain of ability EI in a comprehensive way.

To date, most ADHD research has focused primarily on the ability-EI domains of emotion recognition (Kats-Gold & Priel, 2009; Di Nuovo & Buono, 2007) and emotion regulation (i.e. Rapport, Friedman, Tzelepis, & Van Voorhis, 2002). Impairments in EI abilities have helped in distinguishing between youths with and without ADHD, beyond deficits in many neuropsychological functions and comorbid internalizing and externalizing issues (Sjöwall, Roth, Lindqvist, & Thorell, 2013). In contrast, there has been much less research which has analyzed the relationship between ADHD and trait-EI (TEI). According to Martins, Ramalho and Morin (2010) subjective EI self-perceptions are stronger predictors of mental health than observable EI abilities. Indeed, the self-efficacy literature is replete with examples of how perceptions of one's competencies can influence tangible behaviors and outcomes irrespective of one's actual abilities (Bandura, 1997). Preliminary studies on the link between TEI and ADHD symptomatology comes from two studies of college students which found that different TEI domains were associated with differential symptom profiles, thus showing the heterogeneity of ADHD and its correlates (Fleming & Snell, 2008; Parker, Keefer, & Wood, 2012). In both studies, perceived inability to identify and understand one's emotions only predicted higher inattentiveness whereas perceived inability to regulate and manage one's emotions predicted higher hyperactivity-impulsivity as well as inattentiveness, even after controlling for individual differences in personality. These results are consistent with Barkley's (2010) theoretical distinction between reactive inhibitory deficits, implicated in the hyperactive-impulsive symptoms, and effortful self-regulatory deficits, which are more closely associated with inattentive symptoms and require more emotional and cognitive resources. Because of the distinct implications of the two mechanisms for the aetiology and management of ADHD, the multi-dimensional EI framework may be a useful tool for improving the ADHD theory and applications.

## 2. Aims

The purpose of this study is to verify the relationship between Emotional Intelligence and Self-Image and ADD symptoms. We also hypothesized that children with low or high-medium levels of ADD symptoms have different levels of emotional intelligence and different perceptions of self. We expect that higher levels in ADD scores are associated with lower levels of emotional intelligence and a self image characterized by high negative evaluation and high dynamism.

## 3. Methods

### 3.1. Participants

The participants were 370 early adolescents (females = 203, males = 167), aged from 12 to 16 years ( $M = 13.00$ ;  $SD = .59$ ). The mean age in the two groups (girls and boys) was not significantly different ( $M_{girls} = 12.6$ ;  $SD = .60$ ;  $M_{boys} = 12.5$ ;  $SD = .56$ ;  $t = 1.066$ ,  $df = 368$ ;  $p = .29$ ). By evaluating the mean scores of the Brown Attention-Deficit Disorders Scale, we found 216 (58.4%) participants without ADD symptoms (cut-off  $> 59$ ) and 154 with ADD symptoms (41.6%). A Chi-square test indicated a significantly higher percentage of males with ADD symptoms (males = 87, 23.5%; females = 67, 18.1%;  $\chi^2 = 13.74$ ;  $p < .001$ ).

### 3.2. Procedure

Participation was completely voluntary. Managed by the principal of the school, parents of the admitted participants signed an informed consent. Tests were administrated collectively in classroom-groups, without the presence of the teachers. This survey was reviewed and approved by the Ethics Commission of Kore University.

### 3.3. Measures

SIE (Self-Image Evaluation, Di Nuovo & Magnano, 2013), is a psychometric instrument based on the Semantic Differential. The Semantic Differential (Osgood, Suci, & Tannenbaum, 1957) aims to assess the connotative meaning of language, based on cognitive and affective reactions elicited by a stimulus-concept. SIE consists of 26 adjectives, each of which

is associated with an image that describes the adjective (i.e. «strong as...» with an image of a lion). The images used as qualifiers have been chosen empirically by means of pilot studies. The answer must be given on a 5-point Likert scale, describing how close the perception of self is to the qualifier adjective and to the figure that represents it metaphorically. Empirical analysis (Di Nuovo & Magnano, 2013) verified that Self-Image is described by three main factors:

1. Negative Evaluation (NE): represents negative self-perception and characterizes persons who consider themselves as socially undesirable; this dimension is associated with low levels of self-esteem;
2. Maturity (MAT): represents positive self-perception and characterizes persons who have high levels of social integration; this dimension is associated with high levels of social self-esteem;
3. Dynamism (DYN): high levels in this dimension indicate feeling confident, active, assertive.

The authors present Cronbach alphas calculated for each factor, separately for males and females; the values range from .61 to .76 for males; and from .54 to .77 for females.

EQ-i: YV - Emotional Quotient Inventory: Youth Version (Bar-On & Parker, 2000; it. ad. Sannio Fancello, & Cianchetti, 2012), is a psychometric instrument for children aged 8-18 years. EQ-i: YV is based on the Bar-On model of Emotional Intelligence (1997): “Emotional intelligence is concerned with understanding oneself and others, relating to people, adapting to and coping with one’s immediate surroundings to be more successful in dealing with environmental demands [...] In a way, to measure emotional intelligence is to measure one’s common sense and ability to get along in the world” (Bar-On, 1997, p. 1). According to the author, Emotional Intelligence includes emotional, social and adaptive dimensions; skills related to the understanding of oneself and of others, to coping and to the management of emotions. *EQ-i:YV* consists of 60 items, which measure 6 scales, with a 4-point Likert scale (from 1 = not true/rarely true to 4 = really true). The 6 scales are:

1. Intrapersonal;
2. Interpersonal;
3. Stress Management;
4. Adaptability;
5. Total EQ;
6. General Mood.

The authors present Cronbach alphas calculated for each subscale, separately for males and females and for age level; the values range from .62 to .88 for males; and from .61 to .87 for females.

Brown ADD Scales - Brown Attention-Deficit Disorder Scales (Brown, 2007; it. ad. Del Corno, Lang, & Schadee), teenage version (12-18 years). ADD Scales consist of 50 items grouped in 5 clusters:

1. Organizing, building a hierarchy of priorities and taking action in their work;
2. Focusing, sustaining and shifting attention to different tasks;
3. Supporting the efforts and processing information quickly;
4. Managing frustration and modulating emotions;
5. Using working memory and the ability to remember.

The authors present Cronbach alphas calculated for each cluster; in a subsample of children aged 8-12 years the values range from .71 to .84; Cronbach alphas for total score range from .93 to .96.

### 3.4. Data analysis

Descriptive statistics for all variables were examined and statistical results of demographic variables based on percentages, scale means and standard deviations are presented. Chi-square test and Independent-sample *t* tests were used to assess differences between groups.

Furthermore, a series of ANOVAs were used in order to verify the differences between two groups (ADD symptoms vs no ADD symptoms). The statistical package SPSS 19 for Windows was used for all the analyses (SPSS).

We applied simple linear regression analysis assuming the ADHD Combined total score as the dependent variable and the Intrapersonal, Interpersonal, Stress Management, Total EI, and General Mood as the independent variables.

## 4. Results

An evaluation of six clusters of the Brown ADD Scale also showed significant differences in mean scores, between girls and boys, for the following four clusters (Table 1): *Activation, Effort, Emotion and Memory*, with higher scores in boys.

In the Emotional Quotient Inventory, there were significant differences between the two groups on the *Intrapersonal* subscale, with higher scores in



boys, and *Interpersonal* subscale, with higher scores in girls.

Independent-sample *t* tests indicated that participants with ADD symptoms did not differ from participants without ADD symptoms with respect to age ( $M_{\text{(Without ADD)}} = 12.60$ ,  $SD = .62$ ;  $M_{\text{(With ADD)}} = 12.61$ ,  $SD = .53$ ;  $t = -1.67$ ,  $p = .87$ ).

In the SIE, we also found a significant mean difference in *Dynamism*, with higher scores in boys.

Table 1 - Gender differences among all variables, *t*-test

| ADD Brown Scales    | Males (N = 167) |           | Females (N = 203) |           | <i>t</i> | <i>p</i> |
|---------------------|-----------------|-----------|-------------------|-----------|----------|----------|
|                     | <i>M</i>        | <i>SD</i> | <i>M</i>          | <i>SD</i> |          |          |
| Activation          | 53.96           | 12.35     | 51.17             | 9.92      | -2.41    | .02      |
| Focus               | 56.80           | 10.75     | 55.65             | 11.60     | -.98     | .33      |
| Effort              | 57.69           | 11.06     | 52.43             | 10.75     | -4.63    | < .001   |
| Emotion             | 57.15           | 11.56     | 52.85             | 10.64     | -3.72    | < .001   |
| Memory              | 55.55           | 11.52     | 51.28             | 11.33     | -3.58    | < .001   |
| Action              | 53.66           | 10.38     | 52.95             | 10.52     | -.65     | .51      |
| EQ-i: YV            | <i>M</i>        | <i>SD</i> | <i>M</i>          | <i>SD</i> | <i>t</i> | <i>p</i> |
| Intrapersonal       | 2.44            | .53       | 2.31              | .50       | -2.53    | .01      |
| Interpersonal       | 2.90            | .47       | 3.14              | .46       | 4.98     | < .001   |
| Stress management   | 2.45            | .50       | 2.37              | .46       | -1.67    | .10      |
| Adaptability        | 2.85            | .52       | 2.86              | .45       | .23      | .82      |
| General Mood        | 43.52           | 6.75      | 42.47             | 6.07      | -1.58    | .12      |
| Positive Impression | 14.47           | 3.80      | 14.15             | 2.78      | -1.05    | .29      |
| Total EQ-i:YV       | 52.93           | 8.03      | 53.44             | 5.35      | .73      | .47      |
| SIE                 | <i>M</i>        | <i>SD</i> | <i>M</i>          | <i>SD</i> | <i>t</i> | <i>p</i> |
| Negative Evaluation | 2.16            | .56       | 2.16              | .57       | -.03     | .98      |
| Maturity            | 3.52            | .59       | 3.41              | .65       | -1.70    | .09      |
| Dynamism            | 3.23            | .63       | 2.91              | .52       | -4.87    | < .001   |

An ANOVAs (Tab. 2 and 3) was performed with EQ-i: YV and SIE as dependent variables and two groups (with ADD symptoms vs. without ADD symptoms) as independent variables, separately for females and males. In the female group, the results revealed significant differences in mean scores for the following factors: *Negative Evaluation*, *Dynamism*, *Stress*

*Management, Adaptability, General Mood.*

In the male group there were significant differences in the following factors: *Negative Evaluation, Maturity, Dynamism, Stress Management, Adaptability, General Mood.*

Table 2 - Mean and standard deviation differences between “with ADD” and “without ADD”, female group

|                     | Boys (N = 167)               |           | Girls (N = 203)             |           | <i>F</i> (1,20) | <i>p</i> |
|---------------------|------------------------------|-----------|-----------------------------|-----------|-----------------|----------|
|                     | With high ADD Symptom (N=87) |           | With low ADD Symptom (N=80) |           |                 |          |
| SIE                 | <i>M</i>                     | <i>SD</i> | <i>M</i>                    | <i>SD</i> |                 |          |
| Negative Evaluation | 2.37                         | .60       | 2.05                        | .53       | 14.96           | < .001   |
| Maturity            | 3.37                         | .53       | 3.43                        | .69       | .40             | .53      |
| Dynamism            | 3.06                         | .59       | 2.87                        | .47       | 6.09            | .01      |
| EQ-i: YV            | <i>M</i>                     | <i>SD</i> | <i>M</i>                    | <i>SD</i> | <i>F</i> (1,20) | <i>p</i> |
| Intrapersonal       | 2.28                         | .47       | 2.31                        | .51       | .28             | .60      |
| Interpersonal       | 3.06                         | .48       | 3.19                        | .43       | 3.57            | .06      |
| Stress Management   | 2.59                         | .42       | 2.26                        | .43       | 28.12           | < .001   |
| Adaptability        | 2.69                         | .46       | 2.94                        | .43       | 13.95           | < .001   |
| General Mood        | 40.17                        | 6.14      | 43.59                       | 5.73      | 15.20           | < .001   |
| Total EQ-i:YV       | 53.18                        | 5.71      | 53.56                       | 5.18      | .23             | .63      |

Table 3 - Mean and standard deviation differences between “with ADD” and “without ADD”, male group

| SIE                 | with ADD (N = 87) |           | without ADD (N = 80) |           | <i>F</i> (1,17) | <i>p</i> |
|---------------------|-------------------|-----------|----------------------|-----------|-----------------|----------|
|                     | <i>M</i>          | <i>SD</i> | <i>M</i>             | <i>SD</i> |                 |          |
| Negative Evaluation | 2.27              | .60       | 2.04                 | .50       | 7.71            | .01      |
| Maturity            | 3.36              | .62       | 3.69                 | .50       | 13.34           | < .001   |
| Dynamism            | 3.33              | .74       | 3.12                 | .48       | 4.43            | .04      |
| EQ-i:YV             | <i>M</i>          | <i>SD</i> | <i>M</i>             | <i>SD</i> | <i>F</i> (1,17) | <i>p</i> |
| Intrapersonal       | 2.46              | .53       | 2.41                 | .53       | .36             | .55      |
| Interpersonal       | 2.85              | .47       | 2.96                 | .47       | 2.44            | .12      |
| Stress Management   | 2.55              | .44       | 2.35                 | .53       | 7.12            | .01      |
| Adaptability        | 2.73              | .47       | 2.98                 | .54       | 10.03           | .002     |
| General Mood        | 42.04             | 7.03      | 45.12                | 6.08      | 9.08            | .003     |
| Total EQ-i:YV       | 52.3              | 8.63      | 53.5                 | 7.31      | .94             | .33      |

4.1. Relationships among variables

Pearson’s correlation, conducted separately by gender, showed interesting differences between males and females (Tab. 4 and Tab. 5). In the female group there were no significant correlations between the ADHD combined score and other variables, while in the male group there were

significant correlations between the ADHD combined score and the following variables: Intrapersonal ( $r = .21, p < .001$ ) and Adaptability ( $r = .21, p < .001$ ). In this group a linear regression analysis (Stepwise procedure) was conducted with ADHD combined score as a dependent variable. Adaptability was a unique predictor of the ADHD combined score ( $F(1,17) = 7.60, p = .01$ ). It accounted for 38% of the variance.

Table 4 - Correlations among variables in the female group (Pearson's  $r$ )

|                     | Negative Evaluation | Maturity | Dynamism | Intrapersonal | Interpersonal | Stress Management | Adaptability | Total EI | General Mood |
|---------------------|---------------------|----------|----------|---------------|---------------|-------------------|--------------|----------|--------------|
| Negative Evaluation | -                   |          |          |               |               |                   |              |          |              |
| Maturity            | -.04                | -        |          |               |               |                   |              |          |              |
| Dynamism            | .40**               | .09      | -        |               |               |                   |              |          |              |
| Intrapersonal       | -.14                | .01      | .07      | -             |               |                   |              |          |              |
| Interpersonal       | -.11                | .02      | .03      | .15*          | -             |                   |              |          |              |
| Stress Management   | .28**               | .04      | .19*     | -.05          | -.16*         | -                 |              |          |              |
| Adaptability        | -.22**              | .13      | -.03     | .19**         | .42**         | .05               | -            |          |              |
| Total EI            | -.09                | .13      | .11      | .59**         | .61**         | .36**             | .72**        | -        |              |
| General Mood        | -.48**              | .18*     | -.11     | .29**         | .21**         | -.14              | .27**        | .28**    | -            |
| ADHD Combined       | -.01**              | .03      | -.04     | -.06          | -.01          | .12               | .05          | .05      | .01          |

\*  $p < .01$ ; \*\*  $p < .001$ .

Table 5 - Correlations among variables in the male group (Pearson's  $r$ )

|                     | Negative Evaluation | Maturity | Dynamism | Intrapersonal | Interpersonal | Stress Management | Adaptability | Total EI | General Mood |
|---------------------|---------------------|----------|----------|---------------|---------------|-------------------|--------------|----------|--------------|
| Negative Evaluation | -                   |          |          |               |               |                   |              |          |              |
| Maturity            | -.14                | -        |          |               |               |                   |              |          |              |
| Dynamism            | .19*                | .13      | -        |               |               |                   |              |          |              |
| Intrapersonal       | -.08                | .35**    | .04      | -             |               |                   |              |          |              |
| Interpersonal       | -.28**              | .46**    | .003     | .42**         | -             |                   |              |          |              |
| Stress Management   | .15                 | .14      | .22**    | .25**         | .13           | -                 |              |          |              |
| Adaptability        | -.25**              | .47**    | .02      | .35**         | .58**         | .13               | -            |          |              |
| Total EI            | -.09                | .47**    | .10      | .60**         | .66**         | .43**             | .64**        | -        |              |
| General Mood        | -.48**              | .47**    | .08      | .42**         | .52**         | .15               | .61**        | .55**    | -            |
| ADHD Combined       | -.18*               | .07      | -.08     | .45**         | .21**         | .17*              | .04          | .15*     | .17*         |

\*  $p < .01$ ; \*\*  $p < .001$ .

A linear regression was performed with the ADHD Combined total score as dependent variable, and with the Intrapersonal, Interpersonal, Stress

Management, Total EI, and General Mood scales as the independent variables. Data showed that this model explained the 41% of the variance (Tab. 6).

Table 6 - *Summary of the linear regression analysis*

| Variable                       | <i>B</i> | <i>SE</i> | <i>B St.</i> | <i>t</i> | <i>p</i> |
|--------------------------------|----------|-----------|--------------|----------|----------|
| Intrapersonal                  | .379     | .118      | .199         | 3.196    | .002     |
| Interpersonal                  | .026     | .140      | .013         | .188     | .851     |
| Stress Management              | .754     | .121      | .364         | 6.249    | .001     |
| Total EI                       | -.035    | .013      | -.240        | -2.662   | .008     |
| General Mood                   | -.031    | .008      | -.204        | -3.770   | .001     |
| Adjusted R <sup>2</sup> = .412 |          |           |              |          |          |

*B*=Beta unstandardized coefficient; *SE*= Standard Error; *B St.*= Beta standardized coefficient.

## 5. Discussion

The results show some interesting evidence: as previous studies have highlighted (APA, 2013), male adolescents have significantly higher scores in four out of six dimensions of the ADD Brown Scale (*Activation, Effort, Emotion and Memory*). Males also have a higher percentage of scores above the cut-off for ADHD. Furthermore, their *Dynamism* scores are higher than in the female group (Di Nuovo & Magnano, 2013).

Data analysis, separated by gender, shows significant differences between the subsample with higher scores on the ADD Scale (named “with ADD”) versus the subsample with lower scores on the ADD Scale (named “without ADD”). Specifically, in both the male and female groups, children with ADD symptoms have a worse self-image (higher levels of Negative Evaluation of Self in both groups and lower levels of Maturity in the male group) and perceive themselves as more dynamic and active than children without ADD symptoms. Previous studies regarding the relationship between ADD symptoms, self-image and self-esteem have yielded conflicting results (Diener & Milich, 1997; Hoza, Pelham, Milich, Pillow, & McBride, 1993; Hoza, Waschbusch, Pelham, Molina, & Milich, 2000; Hoza, Pelham, Waschbusch, Kipp, & Owens, 2001). For example, Ohan & Johnston (2002) stress that boys with ADD symptoms tend to overestimate their performance and to avoid tasks in which they may fail, presenting themselves in a positive light. From this perspective, inflated performance estimates serve a self-protective function, as they allow boys with ADD to portray a competent self-image. Boys with ADD try to protect their self-image by portraying themselves in an unrealistically positive light. On the

contrary, other studies have highlighted that poor academic skills and other aspects of ADD incur conflicts with parents, teachers, and peers (Hinshaw & Melnick, 1995). In turn, it is believed that these negative experiences contribute to low self-esteem (Hinshaw, 1992). Therefore, children with ADD symptoms are frequently described as having poor self-esteem, and self-perception may be negatively affected by continued dysfunction (Hechtman, Abikoff, Klein, Weiss, Respitz, Kouri *et al.*, 2004).

By analyzing the differences between “with ADD” and “without ADD” groups in emotional management skills, we can observe that both the male and female groups show statistically significant differences in the following subscales: Stress Management, Adaptability and General Mood. Particularly in both the male and female ADD groups, lower levels of adaptability is seen, which signifies flexibility as well as the ability to find positive ways to cope with everyday problems (Bar-On & Parker, 2012). As Kristensen and colleagues emphasize (Kristensen, Parker, Taylor, Keefer, Kloosterman, & Summerfeldt, 2014), adaptability is also conceptually affiliated with the self-regulatory executive function in Barkley’s (2010) theory: confidence in this EI ability facilitates the use of emotions to solve problems, evaluate consequences, and guide the construction of an appropriate response based on emotional information (Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012).

Moreover, the General Mood score in “with ADD” groups is lower than in “without ADD” groups: children present themselves as pessimistic. These results are confirmed by several studies (Friedman, Rapport, Lumley, Tzelepis, Van Voorhis, Stettner *et al.*, 2003) which emphasize that ADD is associated with deficits in social skills and impaired functioning at school and in family and peer interactions (Hoy, Weiss, Minde, & Cohen, 1978; Biederman, Faraone, & Chen, 1993; Slomkowski, Klein, & Mannuzza, 1995; Biederman, Faraone, Mick, Wozniak, Chen, Ouellette *et al.*, 1996; Greene, Biederman, Faraone, Ouellette, Penn, & Griffin, 1996;). Evidence suggests that children with ADD have some awareness that they are unpopular and have difficulty controlling their social behavior (King & Young, 1982; Lahey, Schaughency, Strauss, & Frame, 1984).

Finally, several studies have demonstrated that the neurobiological, cognitive, and behavioral correlates of ADD support underlying deficits in executive functions and behavioral inhibition (Barkley, 1997). Kristensen *et al.* (2014) have suggested that these deficits have implications in essential socio-emotional domains (Rapport *et al.*, 2002). For instance, the inability to inhibit responses is associated with increased emotional reactivity, lower

frustration tolerance, decreased empathy, and a diminished ability to self-regulate emotions (Friedman *et al.*, 2003). Moreover, research cites impairments in emotion processing, ranging from the perception of emotional states in others to the experience and expression of emotion in oneself (Scime & Norvilitis, 2006; Blaskey, Harris, & Nigg, 2007; Martel, 2009; Sobanski, Banaschewski, Asherson, Buitelaar, Chen, Franke *et al.*, 2010). As a consequence of these deficits in affective appraisal and social processing, children and adolescents with ADD display substantial difficulty interacting with peers and forming relationships (Whalen & Henker, 1985). These interpersonal problems are pervasive and remain fairly persistent over time, with long-term implications for social adjustment in adulthood (Whalen & Henker, 1985; Nixon, 2001).

In a recent study, (Kristensen *et al.* 2014) demonstrated that the dimension of Stress Management in a sample of adolescents was by far the strongest predictor of both hyperactive-impulsive and inattentive symptomatology in ADHD. This finding is not surprising, since confidence in this EI ability facilitates a greater effort to regulate one's emotions and mood states and utilizes them more effectively for problem solving, stress coping, and maintenance of wellbeing (Downey, Johnston, Hansen, Birney, & Stough, 2010; Saklofske *et al.*, 2012). The predictive relationship of stress management to hyperactive-impulsive symptomatology is consistent with the behavioral inhibition feature of Barkley's (2010) theory, primarily implicating the impulse control competencies associated with this dimension. The ability to control (inhibit) an initial impulse allows a hyperactive (motor) response and related emotional behavior to be deferred. This deferral serves to attenuate the initial emotional state in order to produce a response that is more supportive of an individual's long-term goals (Kristensen *et al.*, 2014).

Despite this evidence, the children in our ADD sample – both males and females – showed better stress management ability. This contradictory result can be explained by the fact that our participants were all selected from the general population, thus a cut-off point aimed at distinguishing between non-clinical and clinical populations diagnosed with ADD did not exist. Another reason may be due to the significant tendency to use cognitive strategies as defense mechanisms in order to modulate stressful situations, particularly in ADD subjects with a deficit in emotional intelligence. From this point of view, we might propose the existence of a specific category for these particular subjects.

The results of our research suggest the need for new studies with clinical participants. Furthermore our research did not explore the attachment styles of the participants. Since a secure attachment style usually leads to the ability of emotional self-regulation, we might hypothesize that the “without ADD” sample did not score higher on stress management ability, contrary to our expectations, because of the presence of insecure attachment attitudes among this portion of participants, limiting their ability to manage and control their emotions and to cope with stressful events.

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