# Depressive Symptoms in Adults with Autism Spectrum Disorder and Intellectual Disability: Clinical Correlates and Predictors

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## ABSTRACT

Autism Spectrum Disorder (ASD) usually appears associated with other comorbid psychopathology. For this reason, the present research aimed to study the comorbid conditions in ASD paying more attention to depressive symptoms. The investigation included a sample of 37 adults with ASD and intellectual disability ($M$ = 27.49; SD = 9.2), users of various associations of the Community of Madrid. Autistic severity was assessed with the *Diagnostic Behavioral Assessment for Autism Spectrum Disorder-Revised* (Dibas-R) and comorbidity was assessed through *Autism Spectrum Disorders-Comorbidity for Adults* (ASD-CA). The results showed a significant correlation between autism symptomatology and general comorbidity. Moreover, autistic symptoms were associated with depressive symptomatology. A hierarchical regression analysis was also conducted; and its data suggested that irritability/behavioral excesses were significant predictors of depression in ASD.

**Key words:** Autism Spectrum Disorder, Intellectual Disability, depression, comorbidity, Adult Life.

## Introduction

Autism Spectrum Disorder (ASD) frequently appears associated to comorbid psychopathologies (Bruggink et al., 2016; Jang & Matson, 2015; Cassidy et al., 2018). Research show a high comorbidity of internalizing disorders (Matson & Williams, 2014; Gadow at al., 2016), with depression being one of the most common psychopathologies in this population (Matson & Cervantes, 2014; Bruggink et al., 2016). Also, depressive disorders appear more frequently in people with ASD than in general population (Gadow et al., 2016; Goldin et al., 2014).

Published studies offer heterogeneous prevalence rates because of the reduced samples and the use of scales that are not sensitive to autistic population (Mazzone et al., 2013; Wigham et al., 2017). These numbers appear to be higher in people with high functioning ASD than in those with intellectual disability (Greenlee et al., 2016; Zimmerman et al., 2016) due to the fact that sometimes a diagnosis can be taking into account criteria for neurotypical population. Nevertheless, the diagnosis of depressive symptoms in people with a lower functioning, with severe cognitive and communicative impairments, can be really complex (Ghaziuddin et al., 2002; Johnston & Iarocci, 2017; Wigham et al., 2017).

For people with a lesser functioning somatic and behavioral equivalents of depression, such as changes in appetite, sleep disturbances, behavioral problems, aggressive conduct, irritability, etc., are significant (Adams & Matson, 2015; Clarke & Gomez, 1999; Ghaziuddin et al., 2002). In fact, it is proved that these behavioral changes (psychomotor agitation, aggressive behaviors, and self-harming behaviors) are directly related to the presence of depressive pathology (Nunes, 2017). Also, changes in autism symptoms are sometimes interpreted as a possible warning sign. For instance, social isolation and repetitive behaviors may increase when depressive symptoms are present (Ghaziuddin et al., 2002; McCarthy et al., 2010).

On the whole, the evidence of depressive symptomatology in ASD is inconclusive and sometimes contradictory. However, as it is shown in the literature, internalizing disorders are really common in people with ASD, with their quality of life being affected as a result. For these reasons it is still necessary to carry out research that goes beyond the work already done, mainly focused on infantile-juvenile populations and people of high functioning. Its study is key to promoting prevention, diagnosis and better understanding of this group of symptoms in adult population with autism.

The main objective of this investigation was to study the presence of depressive symptomatology in adults with ASD and intellectual disability (ID). Specifically, we want to study the predictive role of behavior in the depressive traits of people with ASD and ID.

The hypotheses were:

H1. A high comorbidity, associated to autistic symptomatology in young and adults with ASD and ID, is expected.

H2. A significant and positive correlation between depressive symptomatology and autistic symptomatology is expected.

H3. Externalizing symptomatology (disruptive behavior problems, challenging behaviors) is expected to be a great predictor of depressive symptoms.

## Materials and Methods

### *Participants*

The convenience sample was recruited through contact with different associations that work for the social inclusion of people with intellectual disabilities in Madrid, Spain. Thirty-two adults (23 men and 14 women) with ASD an ID (mild to profound, IQ =55-20) formed the study sample. Their mean age was 27 years and 6 months (range 18–46 years old, SD = 9.2).

Sample inclusion criteria were being over 18 years old, having a diagnosis of ASD and ID. Despite having all participants with a diagnosis of ASD, it was reviewed with an ID adult-specific screening scale (DiBAS-R).

Informed consent was provided by all guardians of the participants.

### *Measures*

#### *ASD symptomatology*

Autism symptoms were measured using the *Diagnostic Behavioral Assesment for Autism Spectrum Disorder-Revised* (Dibas-R) (Sappok et al., 2014), a 19-item screening scale for the evaluation of autistic traits in adults with ID. High scores suggest a greater severity of ASD traits, with a total score of 60 (Sappok et al., 2014). The cut-off point is 20. Items are distributed in two subscales based on the two symptomatic ASD domains of DSM-5 (APA, 2013). The *Communication and* Social *Interaction* scale has 12 items the *Stereotypies, Rigidity and Sensory Abnormalities* scale comprises 7 items (Sappok et al., 2014). Items are valued on a Likert scale with four response options: (3) Always, (2) Often, (1) Sometimes, (0) No. In this research the scale showed great psychometric properties, with an excellent internal consistency (α = .90), test-retest reliability (α = .88) and diagnostic validity (α = .89).

#### *Comorbidity*

*Autism Spectrum Disorders-Comorbidity for Adults* (Matson et al., 2006) was used to measure comorbid psychopathological symptoms. It is formed by 37 items that are scored through a *Likert* scale, where 0 means "it is not a problem or a disability at all" and 1 "problem or disability". If it is not applicable or known an "X" is marked. For this study, internal consistency was great (α = .91). Its construct validity was demonstrated through a five-dimensional factorial composition: Anxiety/Repetitive conducts, Behavior Problems, Irritability/Behavioral Excesses, Attention/Hyperactivity/Impulsivity, and Depressive Symptoms (Matson & Boisjoli, 2008).

***Procedure***

This research is part of a larger project related to comorbidity, ASD and the possible influence of transdiagnostic variables. This project was approved by the ethics committee of the participating centres. Once it was approved, a team of professionals specialized in the evaluation and treatment of people with ASD was constituted to carry out this research, who had an exhaustive knowledge of the people evaluated. Professionals with responsibilities for the psychosocial area (psychologists and educators) completed the questionnaires for every individual. Each evaluator covered information for one or two subjects evaluated one by one at different times.

The legal guardians of the participants were informed of the general lines of the research and gave their explicit consent for their inclusion in the research.

***Data analysis***

Statistical analysis package SPSS v.25 was used for data analysis (IBM Corp., 2012). Pearson correlations were generated to examine the relationships between the study variables. Also, a hierarchical regression analysis was conducted in order to find predictor variables of depressive symptomatology in adults with ASD and ID. Included variables in this analysis were clinical variables from ASD-CA distributed in two blocks: internalizing symptoms and externalizing ones. Externalizing variables (behavior problems, irritability/behavioral excess and attention/hyperactivity/impulsivity) were included in the first step; internalizing symptomatology (anxiety symptoms) was included in the second step.

**Results**

Pearson's bivariate correlations are showed in table 2. Results prove that a high comorbidity associated to autism symptomatology exists ($r = .396$; $p < .05$), which means that hypothesis 1 is accepted.

It was also expected a positive and significant association between depressive symptomatology and autism. This result can be observed in table 2 as well ($r = .420$; $p < .01$), and leads us to confirm the second hypothesis.

Hierarchical regression analysis (Table 3) shows that Irritability/Behavioral Excess variable (externalizing dimension) was indeed a good predictor of depressive symptomatology ($\beta = 0.316$; $t = 3.097$; $p < 0.004$). Taking into account these results, hypothesis 3 was also accepted.

**Discussion and conclusions**

This research aimed to study the symptoms of comorbid psychopathologies, in particular depressive ones, in adults with ASD and ID. AS it has been shown, there is a positive and significant association between autism symptomatology and psychopathological comorbidity. This result is in line with other investigations, such as Saqr et al. (2018) one.

Likewise, a positive and significant relation between depression symptoms and ASD was pointed out. The presence of depressive symptoms in adults with ASD has been described in other studies, with similar findings (García-Villamisar et al., 2017; Wallace et al., 2016; Lugo-Marín et al., 2019).

Nevertheless, comorbid depression pathology study in adult population with ASD and ID is currently starting, as reflected in the limited number of published papers on the subject. So far, investigations on comorbid psychopathologies in autism are higher in infant-juvenile population (Adams & Matson, 2015; Johnston & Iarocci, 2017) or in people with high functioning ASD (Mazzone et al., 2013; Greenlee et al., 2016).

Our results also show than externalizing symptomatology, excessive irritability and behavioral excesses (i.e., anger, temper tantrums, irritation; Helverschou et al., 2009) in this study, are significant predictors of depressive symptomatology in adults with ASD and ID.

The results obtained from regression analysis are accompanied by a series of significant correlations between depressive symptomatology and externalizing problems. In this

sense, several investigations suggest the existence of "vegetative symptoms or behavioral equivalents" for depression in ASD (Montazeri et al., 2019). These symptoms include aggressiveness or irritability (Ghaziuddin et al., 2002; Mazzone et al., 2013) and oppositional or challenging behaviors (Wigham et al., 2017). It would be of interest to carry out a similar study including different externalizing symptomatologies such as aggressiveness, self-harm or stereotypes, all characteristics of ASD (Stevens et al., 2017). According to different studies, externalizing behaviors are strongly linked to internalizing problems in ASD, such as the case of aggressiveness in the study by Hill et al. (2014), or stereotyped behaviors in the works of García-Villamisar and Rojahn (2013) and Painter et al. (2018).

The present study has to be understood under its limitations. The most important one could be the difficulty in evaluating internalizing symptoms in people with ASD and ID, especially because of the scarcity of instruments designed for this purpose. For this reason, the results must be interpreted with caution. Our research should be understood as a preliminary study. To the best of our knowledge, there are no specific scales that evaluate depressive symptoms in adults with ASD and ID. This is why we have used the ASD-CA subscale which is sensitive to the characteristics of our population.

Along with this, the valuation has been observational, because most of the participants do not have language skills and present difficulties in expressing their inner mood.

Due to difficulties in recruiting participants with the characteristics of this research, the study sample, although is not really different from other similar investigations, it does result a little small. Our sample may not be representative of the wider population of adults with ID and ASD. That is why it is necessary to carry out other studies that replicate these results, allowing a greater generalization of them.

In conclusion, the key point of this research is the sample, being difficult to access and to evaluate. The results of this study show a presence of general comorbidity, and depressive symptomatology in particular, in adult population with ASD and ID. Behavioral excesses are shown as predictors of depressive symptomatology in this group. According to authors such as Adams and Matson (2015) there is a need to understand and evaluate the nature and of challenging behaviors in ASD (Jang & Matson, 2015); and our results highlight the role of behavior as a way of expressing

depressive symptoms. They also highlight the need for more comprehensive research to address the many unanswered questions. Future research should broaden these results.

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**Conflict of interests**

The authors declare that they have no conflict of interest.

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Table 1.

*Demographic and clinical characteristics of the sample.*

| **Variables** | **Experimental Group** N = 37 | | |
|---|---|---|---|
| | *M* | *DT* | *N* |
| Chronological Age | 27,49 | 9,28 | |
| ASD Severity (Dibas-R[1]) | 34,95 | 4,27 | |
| Comorbidity (ASD-CA[2]) | 16,86 | 6,49 | |
| Gender | | | |
| Males | | | 23 |
| Females | | | 14 |
| Intellectual Disability | | | |
| Moderate ID | | | 5 |
| Severe ID | | | 12 |
| Profound ID | | | 20 |

DIBAS-R[1] =*Diagnostic Behavioral Assesment for Autism Spectrum Disorder-Revised* Sappok et al., 2014). ASD-CA[2]=*Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008).

Table 2.

Pearson R correlations between autistic symptomatology and comorbidity.

| | *2* | *3* | *M* | *DT* |
|---|---|---|---|---|
| DIBAS-R[1] | .396* | .420** | 34.95 | 4.27 |
| ASDCA-T[2] | | .557** | 16.86 | 6.50 |
| ASD-CASUBDEP[3] | | | 1.23 | 1.15 |

*p <.05 **p <.01

DIBAS-R[1] =*Diagnostic Behavioral Assesment for Autism Spectrum Disorder-Revised* Sappok et al., 2014). ASD-CA[2]=*Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008). ASD-CASUBDEP[3] = Subscale of depressive symptomatology of the ASD-CA of *Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008).

Table 3.

*Hierarchical Regression Analysis for depressive symptomatology (ASD-CASUBDEP) in young people and adults with ASD explained through the clinical variables of the comorbidity subscales.*

| | Depressive symptomatology in adults with ASD (ASD-CASUBDEP). | | | |
|---|---|---|---|---|
| | B | T | $R^2$ | F |
| Step 1: | | | 0.199 | 3.987* |
| BehaviorP[1] | 0.270 | 0.338 | | |
| BehavioralEx[2] | 0.248 | 2.590 | | |
| ADHA | 0.061 | 0.406 | | |
| Step 2: | | | 0.239 | 3.822* |
| BehaviorP[1] | 0.07 | 0.860 | | |
| BehavioralEx[2] | **0.316** | **3.097**** | | |
| ADHD[3] | 0.069 | 0.471 | | |
| Anxiety[4] | - 0.339 | - 1.646 | | |

BehaviorP[1] = Subscale of Behavior Problems of the ASD-CA of *Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008). BehavioralEx[2] = Subscale of Irritability/Behavioral excesses of the ASD-CA of *Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008). ADHD[3] = Subscale of ADHD of the ASD-CA of *Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008). Anxiety[4] = Subscale of Anxiety of the ASD-CA of *Autism Spectrum Disorders-Comorbidity for Adults* (Matson & Boisjoli, 2008).