

Original Research

Anxiety in Autistic and Broad Autistic Phenotype Female University Students: What Role Does Anxiety Play in the Diagnosis of Female Autism?

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Abstract

Background: Autism spectrum disorders (ASD) are neurodevelopmental conditions characterized by difficulties in communication and social interaction, alongside restricted or repetitive behaviours and interests. ASD presents with a wide range of concurrent symptoms and varying levels of severity. The higher prevalence of ASD in men has drawn increasing attention to sex differences in recent years. This study focuses on the relationship between anxiety disorders and autism in young women. **Methods:** Three groups of women were compared: neurotypical women with anxiety disorders, women with a broad autistic phenotype and anxiety disorders, and autistic women with co-occurring anxiety disorders. An analysis was conducted of various psychosocial factors, including intolerance to uncertainty, difficulties in emotion regulation, alexithymia, irrational beliefs, and ruminative thinking, that may contribute to the onset and maintenance of anxiety over time. **Results:** The results showed significant differences between neurotypical women with anxiety and those exhibiting autistic traits, with the most significant differences observed in difficulties in emotional regulation and intolerance to uncertainty. **Conclusions:** These findings support the hypothesis that anxiety may mask some of the core symptoms of ASD.

Keywords: autism spectrum disorders; anxiety disorders; broad autism phenotype; camouflage; gender; woman

1. Introduction

Autism spectrum disorders (ASD) are neurodevelopmental disorders that exhibit persistent impairments in communication and social interaction, along with restricted and repetitive patterns of behaviours, activities, and interests (American Psychiatric Association, 2013; 2022); so the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) definition seems specific. Anyway, due to changes in diagnostic criteria, lack of resources, or other reasons, there are many people who have been diagnosed in adulthood; they have been referred to as “the lost generation” (Lai and Baron-Cohen, 2015).

But, in fact, ASDs are characterized by a wide range of symptoms and levels of intensity. This is one of the reasons why the study of the autistic phenotype has led to the expansion of the scope of studies to include first-degree relatives of individuals with ASD, in those who present a milder phenotype, but with a profile similar to the defining characteristics of ASD, the so-called “broad autism phenotype” (BAP) (Bishop et al., 2004; De Groot and Van Strien, 2017; Eyuboglu et al., 2018; Machado et al., 2024; Yadon and Vonarx, 2024). The BAP research has focused not only on families of individuals with autism, but also on the general population, showing that autistic traits are distributed along a continuum (Ruzich et al., 2015) and take on a dimensional

form (Foss-Feig et al., 2016). Although BAP is not strictly equivalent to a diagnosis of ASD, it can affect both the psychological well-being and psychosocial development of the individual; for example, the relationship between BAP and social anxiety (Dickter and Burk, 2021), obsessive-compulsive disorders (Hoekstra et al., 2008), anorexia nervosa (Rhind et al., 2014), or depression (Takara and Kondo, 2014), among others, have been studied.

Another characteristic of this disorder is the wide variation in the intellectual functioning of autistic people (Charman et al., 2011). Forty percent of diagnosed cases are estimated to have cognitive deficits (Hajri et al., 2022). However, those who do not present cognitive deficits may have an average intellectual level comparable to that of their neurotypical peers (Yoo et al., 2024). The term Autism spectrum disorders/high functioning (ASD/HF) refers to individuals who are often characterized as having less severe ‘autistic’ symptoms; they often even achieve good levels of functioning and in some cases, academic and professional success, leading to confusion with BAP. The attenuation of autistic traits may occur in those with better intellectual endowment, which allows them to camouflage themselves in order to achieve better social acceptance (Rynkiewicz et al., 2016). Some undiagnosed people who meet these characteristics could develop camouflage strategies to achieve so-



cial acceptance and avoid the stigma of the diagnostic label and this ability is more developed in women; this ability to camouflage would contribute to the low rate of autism diagnosis in women (Cook et al., 2021; Klein and Macoun, 2025) which makes it necessary to study the possible traits of autism in women in greater depth.

In addition, autistic people with average or high IQs are more likely to be diagnosed with anxiety disorders (Salazar et al., 2015; Van Steensel and Heeman, 2017). Thus, anxiety disorders are very common among autistic individuals; thus, up to 84% of autistic individuals experience some degree of anxiety (White et al., 2009). As with other internalising disorders, anxiety disorders are more common among women than among neurotypical men (McLean et al., 2011). Furthermore, anxiety tends to appear early in the lives of autistic children and intensifies over time (Vasa et al., 2020). It is possible that in the case of girls, the anxiety symptoms are more evident and may mask autistic symptoms. However, it seems that sex differences are not present in certain types of anxiety, such as social anxiety. The difficulty of comprehending what is happening and the sense of uncertainty and permanent helplessness that autistic individuals experience can generate anxiety (Schopler and Mesibov, 1994). Social anxiety and isolation may result from both a desire for more social interaction and a fear of rejection in social, school, or work situations (Feng et al., 2024; Maddox and White, 2015).

However, according to epidemiological studies, although anxiety is a prevalent symptom for autistic people, it is not a universal symptom. Furthermore, the manifestations of anxiety in autistic people do not have the same psychosocial factors as in neurotypical people (Magiati et al., 2017; Paula, 2015). For that reason, the main goal of this study was to analyze anxiety characteristics and modulating variables differences between autistic and non-autistic women and the possible implications for ASD diagnosis. The working hypothesis of this study was that anxiety manifests itself among autistic and non-autistic women, but presents differently and is based on different profiles. In the case of BAP, the weight of anxiety can make diagnosis confusing.

Our research is particularly interested in this concept of BAP since our focus is on women who were not diagnosed with autism during their initial school years and who typically conceal their symptoms and exhibit other related symptoms (Cook et al., 2021). In particular, given that autistic symptoms in women are more internalized than in men (Navarro-Pardo et al., 2021), some forms of anxiety disorders in women might mask signs of autism and, consequently, delay, hinder, or prevent the diagnosis of ASD. ASD is currently considered in a dimensional manner, as a reflection of neurodiversity in the general population. Consequently, from a transdiagnostic point of view, due to the stigma produced by the diagnosis of autism, the presence of generalized anxiety disorders—particularly so-

cial anxiety—can influence and obscure the primary diagnosis of autism.

2. Materials and Methods

2.1 Participants

For the second clinical trial of Cognitive-Behavioural Anxiety Intervention Programme (PICCA from the Spanish “Programa de Intervención Cognitivo-Conductual para la Ansiedad”) (Sánchez-Cueva, 2023), a call for participation was made to university students from the University of Valencia (Colleges of Teaching, Psychology and Speech Therapy, Computer Engineering and Sciences). The professors of 3rd year undergraduate students sent an email stating that they were conducting a study on the anxiety levels of university students. The mailing provided a link to the Monitoring and Evaluation Tools for Behavioural Analysis (METBA) system (Alcantud-Marín et al., 2012) to answer a battery of self-report questionnaires. The system required, as a prior step, verification of identity by replying to the registration email, reading the conditions of participation, and signing the informed-consent form. Another email was later sent with the assessment results, informing those who scored above the critical cut-off point of the possibility of joining the PICCA. The total number of responses received from students was 195. Participants who did not reply to the identity-confirmation email, those who did not use the official email address as students of the university, and those who did not fill in all the questionnaires, were rejected. Finally, only 75 students met all the inclusion PICCA criteria (Sánchez-Cueva, 2023). Given the objectives of the study, twenty-six male participants were excluded.

In order to establish a group of students with known diagnoses that would serve as a criterion, the University of Valencia’s Service for Students with Disabilities (<http://www.uv.es/uvd/disability/en/uvd/disability.html>) was contacted. In the academic year 2024/2025, the census of the service showed that 70 students had declared ASD as a diagnosis to access support services. The service contacted only women, informed them about the study, and invited them to participate as volunteers, receiving 21 positive responses. Although the response rate is low, it should be noted that it corresponds approximately to the prevalence ratio by sex (4:1). No exclusion criteria were applied, and all volunteers were accepted. Of the students who responded to this second call, their email identifiers verified that they were not previously included in the database of participants in the PICCA call. Only two of the participants in the PICCA project were also included in the support service database, so they were only included in this second group. Table 1 shows the distribution of all included participants according to age and the source of information. According to the procedure approved by the Human Research Ethics Committee of the University of Valencia (reference 2023-PSILOG-3154492), the participant’s consent was obtained.

Table 1. Distribution of participants according to age and source of information.

	Source		Total
	PICCA Program	University support service	
Age	19–20 years old	21	2
	21–23 years old	18	9
	24–26 years old	6	1
	27 years or more	2	9
Total	47	21	68

PICCA, from the Spanish “Programa de Intervención Cognitivo-Conductual para la Ansiedad”.

2.2 Instruments for Assessment

A set of self-report questionnaires was administered, divided into two groups. The first group of questionnaires was targeted to screen for ASD and anxiety traits. The second part included five questionnaires that measured both the level of anxiety and specific autistic symptoms.

2.2.1 Autism Spectrum Quotient (AQ)

The AQ ([Baron-Cohen et al., 2001](#)) is a self-report screening instrument with 50 items, in which the respondent must choose whether he/she agree or disagree with questions or expressions related to behaviours that would express some characteristics of ASD. The aim of the AQ was to identify BAP that are typically left out of the ASD diagnosis. There is a short form of 28 items (AQ-SF) developed to improve the effectiveness of the test ([Hoekstra et al., 2011](#)); this short version has been adapted to Spanish ([Lugo-Marín et al., 2019](#)). The AQ-SF shows adequate internal consistency (0.79–0.88) and sensitivity and specificity of 0.97 and 0.82, respectively.

2.2.2 Screen for Adult Anxiety Related Disorders (SCAARED)

The SCAARED ([Angulo et al., 2017](#)) is the adult version of the previous questionnaire (SCARED, [Birmaher et al., 1997](#)) used to assess anxiety in autistic youngsters ([Stern et al., 2014](#)). It is composed of 41 items measuring four factors: generalized anxiety (GA) disorders; social anxiety (SA); Panic Disorders (PD) or significant somatic symptoms; and separation anxiety disorder (SAD). SAD was included as an anxiety disorder in the DSM-5 ([American Psychiatric Association, 2013](#); [Silove et al., 2015](#)), and the SCAARED is the only self-report questionnaire that includes this factor; there is an adapted version in Spanish (SCAARED-Sp; [Sánchez-Cueva et al., 2021](#)). SCAARED-Sp has an internal consistency of 0.91 and a stability (test-retest) of 0.81.

2.2.3 Social Responsiveness Scale, 2nd Ed. (SRS-2)

The SRS-2 ([Constantino and Gruber, 2005](#); [2012](#)) identifies social impairment related to autism and quantifies its severity; it can be used throughout life, showing the capacity to detect subtle symptoms and distinguish between

different clinical conditions. Currently, the research team of the present study is developing the Spanish version of this scale. The US version of SRS-2 has an internal consistency of 0.95 and a stability (test-retest) of between 0.88 and 0.95.

2.2.4 Interviews

A clinical psychologist (a co-author of the study) followed the Mini International Neuropsychiatric Interview (MINI) for anxiety ([Ferrando et al., 2000](#)) and conducted an interview to confirm the diagnosis of anxiety disorder. In the anamnesis, clinical information was collected, confirming treatment for anxiety and other disorders (the most significant ones were depression and eating disorders).

In the case of autistic individuals, the main symptoms of the disorder tended to be those that were primarily anxiety-related (i.e., problems with sensory hyperactivity, difficulties in understanding the perspective of others, social rejection, intolerance to uncertainty when faced with changes in activity, transit, or a shifting focus of attention, and ambiguity of environmental demands). A hypothetical model was created by Wood and Gadow ([2010](#)) to explain the occurrence and maintenance of anxiety disorders in individuals with ASD, resulting in experiences that are similar to post-traumatic stress. After analyzing these characteristics and reviewing the specialized scientific literature, the following instruments were selected as working hypotheses.

2.2.5 Difficulties in Emotion Regulation Scale (DERS)

Despite the wide recognition of the importance of emotional regulation (ER) in autism literature, there is a lack of knowledge about ER impairment and related factors. ER is hypothesized to be a differential factor in autistic individuals by sex, especially in the most severe cases ([Wieckowski et al., 2020](#)). Clinically relevant difficulties in emotional regulation are measured by DERS ([Gratz and Roemer, 2004](#)), a self-report questionnaire; the Spanish version is by Hervás and Jódar ([2008](#)) and is composed of 28 items using a five-point Likert scale (almost never–almost always) that was used to measure the magnitude of deregulation. All items are classified into five factors or subscales: Emotional dysregulation (i.e., difficulties in con-

trolling impulsive behaviours when experiencing negative emotions and limited access to effective emotion regulation strategies); Emotional Rejection (i.e., non-acceptance of negative emotions); Everyday interference (i.e., difficulties engaging in goal-directed behaviours when experiencing negative emotions); Emotional inattention (i.e., lack of emotional awareness), and Emotional confusion (i.e., lack of emotional clarity). The internal consistency of the overall scale is 0.93, with the subscales varying from 0.91 to 0.73; the test-retest measurement stability varies from 0.72 to 0.46, being significant in all cases. No sex differences were observed in the neurotypical population.

2.2.6 Intolerance to Uncertainty Scale (IUS)

The possibility of re-exposure to a traumatic phenomenon or event can lead to intolerance to uncertainty, which can cause levels of worry, rumination, anxiety, and similar symptoms, and creates a sense of helplessness, which would explain some anxiety or even panic disorders. Autistic individuals prefer routines and predictable environments, and there is evidence of a connection between anxiety and intolerance to uncertainty (Jenkinson et al., 2020). The IUS (Freeston et al., 1994) consists of 27 items with five response alternatives (1 = Not at all characteristic of me, and 5 = Extremely characteristic of me), with an internal consistency coefficient of 0.91 and test-retest reliability of 0.78. It is organized into two factors, inhibition-generating uncertainty (IGU) and uncertainty understood as bewilderment or unpredictability (UUB). The present study used the Spanish version by González-Rodríguez et al. (2006). Significant sex differences were observed, with women scoring higher on IGU, but not on UUB or the total score; the mean scale score was 58.6 (SD = 19.8).

2.2.7 Toronto Alexithymia Scale (TAS-20)

Alexithymia is a disorder that affects emotional communication, and it is associated with operational thinking, high impulsiveness, and abundant body sensations. There are often sex differences, and males tend to have higher scores. Alexithymia is related to depressive disorders, anxiety disorders, and eating disorders, with one in five autistic individuals having alexithymia (Kinnaird et al., 2019). The TAS-20 (Meganck et al., 2008) in the Spanish Version (González-Arias et al., 2018) has acceptable internal consistency (α total = 0.78; α for males = 0.82; α for females = 0.77) and measurement stability (r test-retest = 0.77), and assesses three factors: difficulty in identifying feelings (DIF); difficulty in describing feelings (DDF); and outward-oriented thinking (OOT). A recent meta-analysis (Mendia et al., 2024) examined sex differences in alexithymia and its dimensions. The results showed that gender differences have a significant but small impact on alexithymia, as well as two of its dimensions: difficulties in identifying and differentiating feelings from body sensations and difficulties in describing feelings to others (DIF

and DDF). OOT was the only one that showed a statistically significant effect size; however, these results referred to a neurotypical population. The data suggested that gender plays a larger role in emotional processing in autistic individuals (Livingston et al., 2022), and this is even greater in the case of transgender autistic individuals (Kallitsounaki and Williams, 2023).

2.2.8 Irrational Beliefs Test (IBT)

The IBT is based on Jones's (1968) work about measuring Ellis's (1962) irrational belief system. Calvete-Zumalde and Cardeñoso-Ramírez (1999; 2001) developed an abbreviated Spanish version of the Irrational Beliefs Inventory (IBI), (Jones, 1968); the questionnaire is a self-report tool of 46 items to be answered on a four-point Likert scale (disagree - agree). It is based on the ABC schema of Ellis' model, in which the cognitive, emotional, and behavioural consequences (C) are not directly produced by events and occurrences in the environment (A), but rather by the thoughts, attitudes, and beliefs (B) that mediate between A and C that cause these consequences. It is organized around eight factors: approval; self-expectations; blaming tendency; helplessness; problem avoidance; dependence; past influence; and perfectionism. Finally, the total score combines the scores of all eight factors (α = 0.77). Although individuals with autism may have problems with social cognition and communication, they may also display normative or superior abilities to their neurotypical peers in certain personal areas. Autistic individuals can exhibit remarkable abilities in reasoning, judgment, and decision-making, showing enhanced rationality by exhibiting more non-judgmental rationality than their peers (Rozenkrantz et al., 2021) and conversely, more irrational beliefs, dysfunctional emotions, and maladaptive behaviours than their neurotypical peers.

2.2.9 Ruminative Responses Scale (RRS)

Rumination represents a maladaptive way of processing emotions that is not appropriate. Individuals who are ruminative tend to remain focused on the stressor over time by rehashing thoughts about distress, past mistakes, regrets, and shortcomings (Nolen-Hoeksema et al., 2008). Moderate relationships between rumination and emotional dysregulation, depression, and aggression have been described in autistic youth (Patel et al., 2017) and autistic adults (Gotham et al., 2014). The RRS (Nolen-Hoeksema and Morrow, 1991) and the Spanish version (Hervás, 2008) is a 22-item questionnaire with a five-point Likert scale composed of two factors (Reflection and Brooding). The RRS has shown adequate internal consistency (α = 0.89) and test-retest stability (0.80 at five months); the Spanish version of the RRS was used in the present study.

Table 2. Distribution of the three groups of women by health condition.

	NT with anxiety disorders (Group 1)	Autistic traits (BAP) and anxiety disorders (Group 2)	ASD and anxiety disorders (Group 3)	Total
Age				
19–20 years old	7	11	2	20
21–23 years old	15	7	4	26
24–26 years old	3	1	1	5
27 years old or more	4	3	4	11
Total	29	22	11	62

NT, neurotypical; BAP, broad autism phenotype; ASD, autism spectrum disorders.

2.3 Procedure

The objectives of our study required the exclusion of male students. After analyzing the initial results, three groups of women were formed. The groups were constructed by taking into account the scores achieved in the AQ-SF and SCAARED. Six students scored below the cut-off point for anxiety and non-significant autistic traits; as this was a small number and did not provide any information, they were excluded. The first group (neurotypical [NT] women with anxiety disorders) was made up of all the participants who obtained scores above the clinical cut-off point in total anxiety (Sánchez-Cueva et al., 2021) and did not reach the cut-off point in the AQ-SF (Lugo-Marín et al., 2019). The second group [autistic traits (BAP) and anxiety disorders] was formed in a similar way, by those women who obtained scores above the cut-off point in the AQ-SF and SCAARED. The third group (ASD and anxiety disorders) was made up of women with a confirmed diagnosis of ASD for office service support and with scores above the cut-off point in total anxiety as assessed by the SCAARED. Table 2 shows the distribution of the participants (females) according to their age and group assignment.

2.4 Data Analysis

The size of the groups and the low homogeneity in the variance between groups suggested the use of non-parametric statistical inference techniques. The H Index (Kruskal-Wallis H test) was used for those variables that did not present a homogeneous variance between the groups (Gibbons, 1993). The Dunn post-hoc tests allowed us to analyze differences between pairs of groups in which the detected differences existed globally (Spiegel et al., 2007). All calculations were performed using the SPSS statistical package 29.0 version (IBM Corp., Armonk, NY, USA), under license from the University of Valencia. Statistical significance was set at $p \leq 0.05$.

3. Results

3.1 Initial Study (Characterization of the Groups)

The initial study focused on categorizing the severity of autistic traits based on each age group. For this purpose, the responses to the SRS-2 were analyzed; the results of which are shown in Table 3. Based on their total SRS-2 score, individuals can be classified in the following groups:

(a) no traits; (b) mild traits; (c) moderate traits; and (d) severe traits. In our study, the AQ-SF detected one case in the ASD and anxiety disorders group (Group 3) who did not reach the clinical cut-off point on the SRS-2. On the other hand, one case in the neurotypical women with anxiety disorders group (Group 1) was not detected by the AQ-SF but presented mild features on the SRS-2. The correlation between the AQ-SF scores and the total score on the SRS-2 indicated that both instruments measured the same construct ($r = 0.87$, $p < 0.001$). The bias level was minimal and acceptable given the sensitivity and specificity indices, so it was decided not to modify the configuration of the groups.

The Kruskal-Wallis H test of the SRS-2 subtests indicated a significant discrepancy in all dimensions among the three groups (see Table 4 and Fig. 1). The post-hoc contrast tests (see **Supplementary Material**) indicated that the differences were unevenly distributed. On the one hand, Group 1 (NT with anxiety disorders) and the two groups with autism traits (Group 2, BAP and anxiety disorders, and Group 3, ASD and anxiety disorders) showed significant differences in the autistic traits assessed by the SRS-2, except for social awareness, social cognition, and social communication. The level of social awareness, understood as the ability to perceive, understand, and comprehend other people's problems and needs, is the distinguishing factor between Group 2 (BAP and Anxiety Disorder) and Group 3 (ASD and anxiety disorders). In conclusion, Group 3 had a profile compatible with the diagnostic criteria for ASD, whereas Group 2 had a profile that differed from Group 1 (NT with anxiety disorders) in all dimensions except social awareness. Groups 2 and 3 (both with autistic traits) did not differ in social cognition, social communication, and social motivation. However, when we analysed the total social communication and interaction (SCI) and restricted interests and repetitive behaviours (RRB) scores, the differences between the two groups were significant ($p \leq 0.05$).

The SCAARED assesses four forms of anxiety (i.e., panic disorder or significant somatic symptoms, generalised anxiety disorder, separation anxiety disorder, and social anxiety disorder). Table 5 shows the distribution of cases that exceeded the cut-off point in each subtest of the SCAARED and the total score. The groups with autistic traits represented a higher percentage of participants who showed clinically significant scores in social phobia disorder.

Table 3. Distribution of autistic trait levels according to SRS-2 scores.

		NT with anxiety disorders (Group 1)	Autistic traits (BAP) and anxiety disorders (Group 2)	ASD and anxiety disorders (Group 3)	Total
Autistic trait levels to SRS-2	No Clinical	28	6	1	35
	Mild	1	9	0	10
	Moderate	0	7	6	13
	Severe	0	0	4	4
Total		29	22	11	62

SRS-2, Social Responsiveness Scale, 2nd Ed.

Table 4. Kruskal-Wallis H test for differences between the groups in SRS-2 subtests.

	Groups			Kruskal-Wallis	
	NT	BAP	ASD		
	Group 1	Group 2	Group 3		
	Medium range			H	<i>p</i>
Social awareness (AWR)	27.05	27.57	51.09	15.99	<0.001
Social cognition (COG)	20.12	37.98	48.55	24.28	<0.001
Social communication (COM)	16.86	40.89	51.32	38.37	<0.001
Social motivation (MOT)	17.74	39.32	52.14	35.54	<0.001
Social communication and interaction (SCI)	17.08	39.59	53.32	39.06	<0.001
Restricted interests and repetitive behaviours (RRB)	20.17	36.07	52.23	27.47	<0.001
Total	17.19	39.11	54.00	39.29	<0.001
n	29	22	11		

Table 5. Number of women with clinically significant scores on each of the SCAARED subtests.

SCAARED subtests	NT with anxiety disorders (Group 1)		BAP and anxiety disorders (Group 2)		ASD and anxiety disorders (Group 3)	
	Abs.	%	Abs.	%	Abs.	%
Panic disorders	25	86.21	21	95.45	11	100.00
Generalised anxiety disorders	29	100.00	20	90.91	11	100.00
Separation anxiety disorders	26	89.66	17	77.27	8	72.73
Social phobic disorder	7	24.14	17	77.27	10	90.91
Total anxiety disorders	29	100.00	22	100.00	11	100.00
n	29		22		11	

SCAARED, Screen for Adult Anxiety Related Disorders; Abs, absolute frequencies.

der and panic disorders (significant somatic symptoms) (see Table 5), as opposed to a lower percentage of individuals in the anxiety disorder group. The Kruskal-Wallis H test showed that the only subtest in which the performance was statistically insignificant was precisely that of Separation Anxiety (see Table 6, Fig. 2).

The post hoc contrast (see **Supplementary Material**) showed differential behaviours depending on the source of anxiety. For example, there were no significant differences among the three anxiety groups. There were no differences in separation anxiety, and the differences in social anxiety only occurred between Group 1 (NT with anxiety disorders) and Group 2 (BAP and anxiety disorders) and Group 3 (ASD and anxiety disorders). No differences were detected between the two groups with autistic traits (BAP and ASD). However, due to the small size of the groups and the sample size, these results should not be generalized.

3.2 Differential Study

The questionnaires described in the instruments section were used to study high levels of anxiety in young women, and the results are presented in Table 7.

With regard to emotional dysregulation scores measured using the DERS, both emotional inattention and emotional confusion did not generate differences among the three groups. There are differences in emotional rejection, interference, emotional dyscontrol, and the total emotional dysregulation score. The differences between the groups (see post hoc contrasts in **Supplementary Material**) showed that the neurotypical women with anxiety disorders (Group 1) differed from BAP (Group 2) and also, with larger differences, from the group of women with ASD and anxiety disorders (Group 3) in interference, dyscontrol, and total emotional dysregulation. However, the two

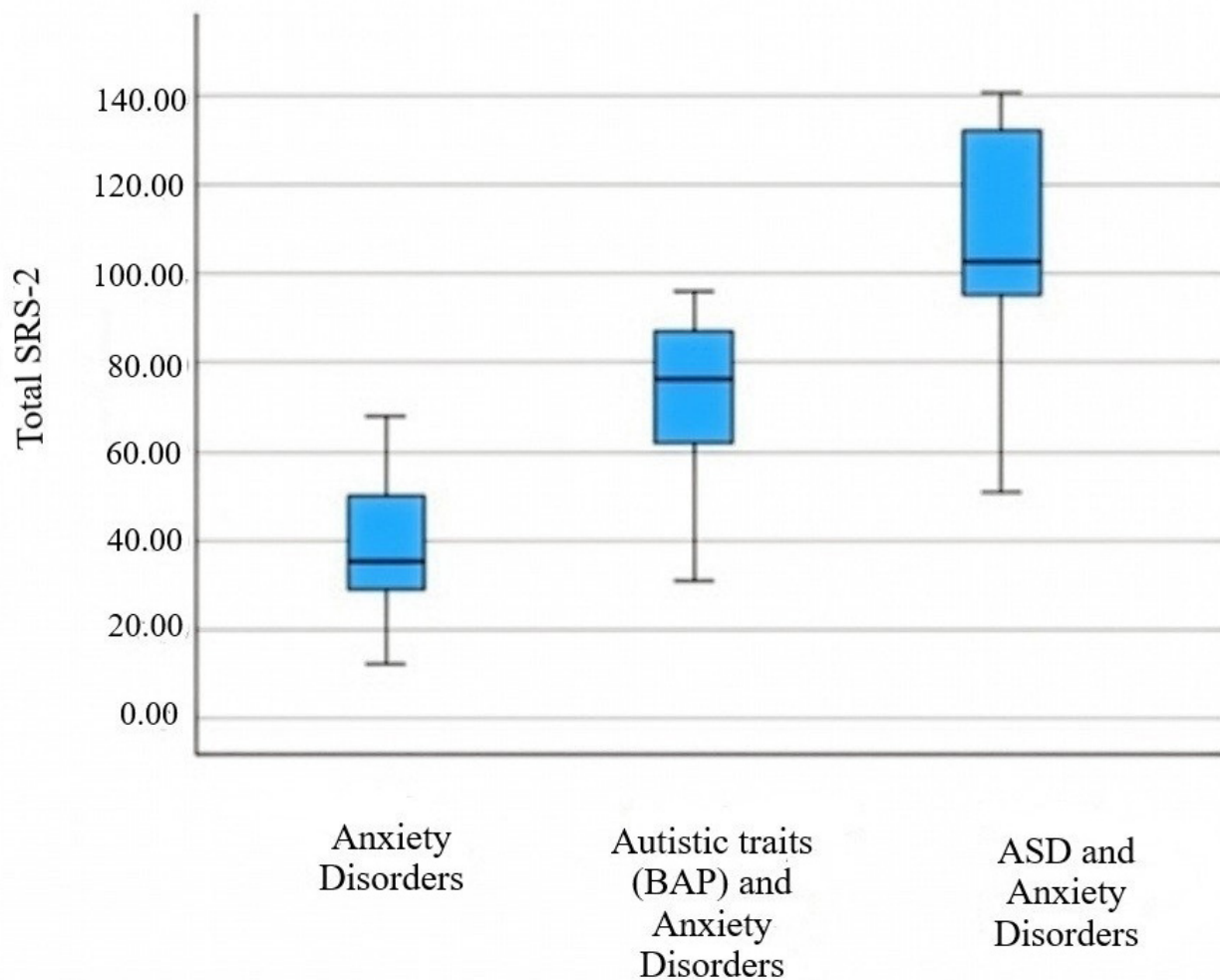


Fig. 1. Box plot representation of the total score in SRS-2 for the three groups analysed.

Table 6. SCAARED scores for the different types of anxiety assessed in the three groups.

	NT Group 1	BAP Group 2	ASD Group 3	Kruskal-Wallis	
	Medium range			H	p
Panic disorders	23.60	40.70	33.91	11.52	0.003
Generalised anxiety disorders	25.48	37.48	35.41	6.20	0.045
Separation anxiety disorders	33.17	29.89	30.32	0.48	0.788
Social phobic disorder	19.09	40.45	46.32	26.81	<0.001
Total anxiety disorders	22.78	39.93	37.64	12.87	0.002
n	29	22	11		

groups with autistic traits (Group 2 and Group 3) did not differ on any of the subscales of the emotional dysregulation test. Note that the scores of individuals in Group 2 (BAP and anxiety disorders) were slightly higher than those of Group 3 (ASD and anxiety disorders).

Our study revealed that autistic women scored higher on intolerance to uncertainty (i.e., both in total and on the IGU and UUB subscales) (see Table 7). When analyzing the differences among groups (see **Supplementary Material**), the differences are evident when comparing the anx-

iety disorders group with the two groups with autistic traits (BAP and ASD). According to the literature, intolerance of uncertainty is a characteristic trait of anxiety in people with autistic traits (Cai et al., 2018).

Regarding alexithymia scores, the patterns observed were similar to those of other variables analysed. When analysing the scores of the two groups of women with autistic traits (i.e., BAP and ASD), similar patterns were observed in both groups. When comparing the scores of group 3 with group 1, only the DIF and DDF were significant ($p <$

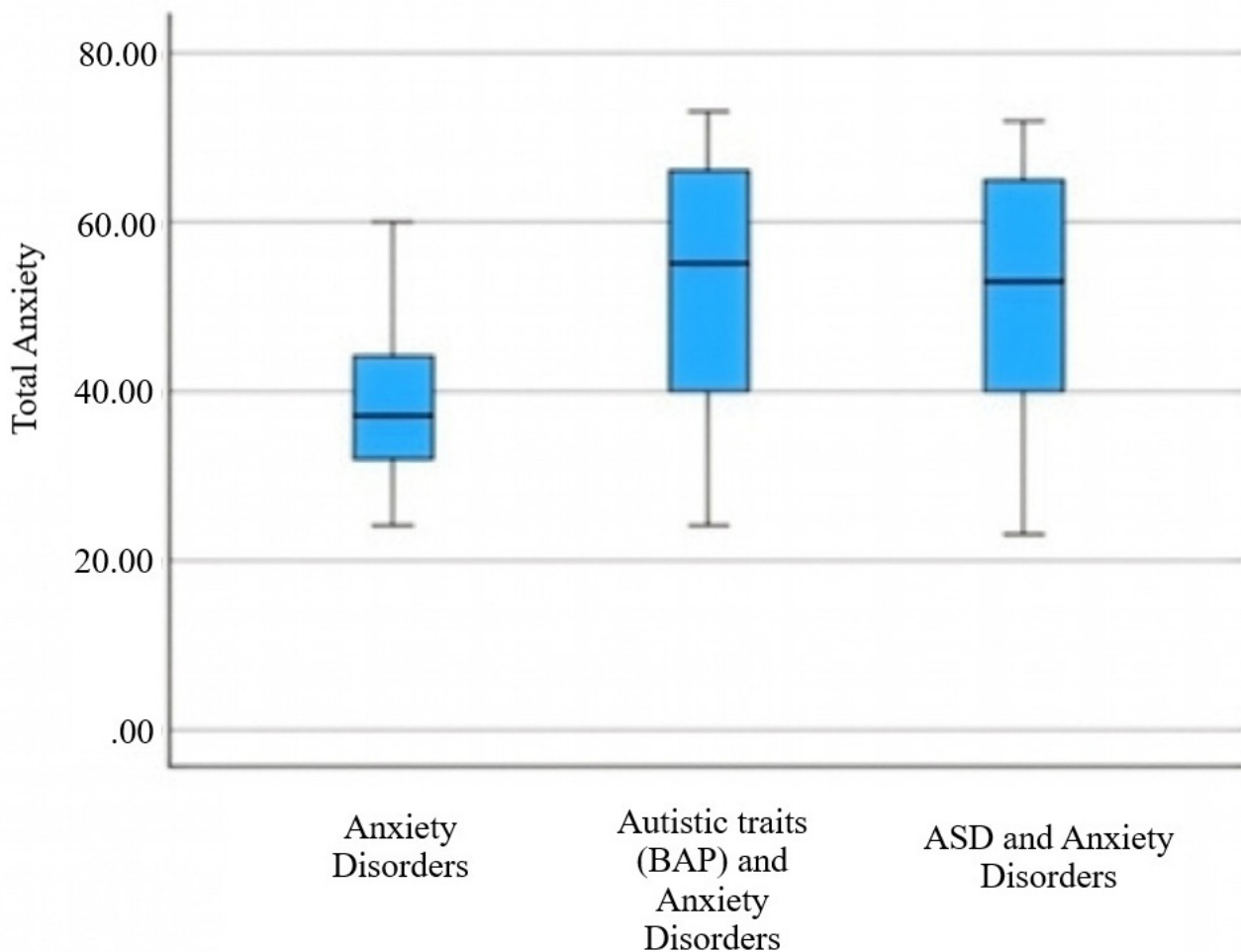


Fig. 2. Box plot representation of the total score in Anxiety (SCAARED) for the three groups analysed.

0.05). In the case of the comparison with group 2, only the differences in DDF were significant. However, OOT did not show significant differences in either case.

The literature suggested that alexithymia is not present in all autistic individuals, although when it is present, it tends to be more prevalent than in their neurotypical peers (e.g., [Kinnaird et al., 2019](#)). In our study, we did not find statistical differences between groups of women with autistic traits (i.e., BAP and ASD) on any of the subscales of the TAS-20. The differences between women with anxiety disorders and women with autistic traits were mostly in the ability to describe their feelings (DDF).

The IBT evaluates eight factors, of which only three showed statistically significant differences ($p < 0.05$): approval, problem avoidance, and past influence. Many mental disorders involve the development of irrational beliefs, but none of the factors assessed with the IBT resulted in significant differences between the two groups in our study (see post hoc test in **Supplementary Material**). In particular, it is noteworthy that among the two groups with autistic traits (i.e., BAP and ASD), differences were only found in the Problem Avoidance subscale ($p = 0.019$). When com-

paring the neurotypical group with anxiety disorder (Group 1) with the BAP group (Group 2), differences were observed in Past Influence ($p < 0.05$), whereas when comparing the former with the ASD group (Group 3), the differences were concentrated in Approval ($p = 0.006$), Blaming Tendency ($p = 0.041$), Problem Avoidance ($p = 0.010$), and Past Influence ($p = 0.011$).

In the present study, we found that all RRS scores (i.e., reflective, brooding factors, and total scores) were higher in the BAP group (Group 2) than in the ASD group (Group 3). The Kruskal-Wallis H test showed significant differences ($p < 0.05$) in both factors and in the total score. In the pairwise comparison (see **Supplementary Material**), the greatest differences were found when comparing the ASD group (Group 3) with the NT with anxiety disorders group (Group 1), but the differences between the two groups with autistic traits were not significant.

3.3 Anxiety in ASD Females

The starting point is the hypothesis of a relationship between the severity of autistic symptoms and the intensity of anxiety symptoms ([Freeth et al., 2013](#); [Kitazoe et al.,](#)

Table 7. Results of the explanatory questionnaire battery for the three groups of women.

	NT Group 1	BAP Group 2	ASD Group 3	Kruskal-Wallis	
	Medium range			H	<i>p</i>
Emotional dysregulation					
E. Inattention	29.54	33.70	32.05	0.66	
E. Confusion	26.40	35.23	37.50	4.51	
E. Rejection	23.47	40.08	35.50	11.32	*
E. Interference	24.22	37.80	38.10	8.93	*
E. Dyscontrol	22.53	41.02	36.09	14.04	**
E. Dysregulation Total	22.38	41.25	38.05	14.55	**
Intolerance to uncertainty					
IGU	22.47	38.34	41.64	13.94	**
UUB	24.33	36.02	41.38	9.29	*
Total IoU	22.98	37.00	42.95	12.96	*
Alexithymia					
DIF	25.97	37.30	34.50	5.33	
DDF	24.03	38.55	37.09	9.42	*
OOT	32.66	27.82	35.82	1.68	
Alexithymia Total	25.76	36.50	36.64	5.53	
Irrational beliefs					
Approval	37.24	23.25	32.85	7.69	*
Self-Expectations	32.52	30.27	31.27	0.20	
Blaming Tendency	31.91	26.61	40.18	4.21	
Helplessness	34.26	28.91	29.41	1.30	
Problem Avoidance	29.60	27.64	44.23	7.19	*
Dependence	30.09	31.05	36.14	0.94	
Past Influence	25.14	35.05	41.18	7.84	*
Perfectionism	30.60	30.50	35.86	0.80	
Total Irrational Beliefs	32.67	26.52	38.36	3.40	
Ruminative responses					
Reflection	24.40	40.95	31.32	10.64	*
Brooding	24.57	39.61	33.55	8.97	*
Total R.R.	21.83	43.98	32.05	18.91	**
<i>n</i>	29	22	11		

* $p \leq 0.05$; ** $p \leq 0.01$. IGU, inhibition-generating uncertainty; UUB, uncertainty understood as bewilderment or unpredictability; DIF, difficulty in identifying feelings; DDF, difficulty in describing feelings; OOT, outward-oriented thinking; IoU, intolerance to uncertainty.

2014; Tonge et al., 2016; White et al., 2011). To test this hypothesis, we calculated the correlation between the total score on the SRS-2 as a measure of autistic symptoms and total anxiety, and the different types of anxiety measured by the SCAARED. Although in absolute terms there were high correlation values (see Table 8), the small number of participants in the groups meant that the differences were not statistically significant. However, at an exploratory level, it seemed that the profiles of the two groups of interest (BAP and ASD) were confirmed to differ in the emotional regulation score, which was significant in the BAP group but not in the ASD group. Both groups shared a relationship with intolerance to uncertainty, which, on the other hand, did not appear as a significant predictor in the anxiety disorders group.

4. Discussion

In the present study, we suggest that women with ASD have an explanatory model of anxiety that differs from that of women without autism. Anxiety in autistic people may play at least three roles, as suggested by Wood and Gadow (2010): (a) as an aftereffect of ASD symptoms (e.g., anxiety may be caused by social rejection or by uncertainty in social responses); (b) as a moderator of ASD symptom severity, in the sense that anxiety may exacerbate deficits in social skills and repetitive behaviours, which are core symptoms of autism (e.g., repetitive behaviours or isolation as a calming factor in stressful situations); and (c) by masking some of the core symptoms of ASD (e.g., crises of emotional dysregulation may be mistaken for anxiety crises). Our study was particularly focused on this last point because anxiety disorders are highly prevalent also in NT women (McLean

Table 8. Correlations between the intensity of the symptoms (SRS-2) and predictive variables in the three clinical groups.

	Total	NT (Group 1)	BAP (Group 2)	ASD (Group 3)
Total anxiety	0.54**	0.21	0.38	0.11
Panic disorders	0.45**	0.28	0.26	0.09
Generalised anxiety disorders	0.37**	−0.11	0.34	−0.16
Separation anxiety disorders	0.19	−0.04	0.29	0.42
Social phobic disorder	0.64**	0.25	0.19	0.16
Emotional regulation	0.53**	0.34	0.53**	−0.12
Unpredictability	0.65**	0.33	0.53**	0.71*
Alexithymia	0.45**	0.48**	0.13	0.16
Irrational beliefs	0.23	0.14	0.29	0.43
RR	0.50**	0.39*	0.50*	−0.04
N	62	29	22	11

** $p \leq 0.01$; * $p \leq 0.05$; RR, ruminative responses.

et al., 2011). On the other hand, and based on the fact that autistic symptomatology and internalizing symptoms overlap very often (Rosen et al., 2018), the early onset and diagnosis of anxiety disorders or other internalizing disorders in women may be masking another disorder, as was our hypothesis.

The importance of emotional regulation as a risk factor for autistic mental health has been increasing in recent years (Mazefsky et al., 2013; Samson et al., 2014). The term emotional dysregulation refers to a lack of ability to monitor and control the intensity and expression of emotions, which is related to specific deficits in executive functions and is characteristically expressed as mood instability, irritability, temper tantrums, and even self-harm (Samson et al., 2015). A study (Dell’Osso et al., 2023) proposed that some of the core features of ASD (i.e., in particular repetitive behaviours, social difficulties, and alexithymia) are exacerbated by emotional dysregulation. Other study (Conner et al., 2020) go so far as to consider emotional dysregulation in autistic individuals as a determinant of anxious experiences. As shown in the **Supplementary Material**, some significant differences were found between main dimensions of emotional dysregulation. That is, between group 1 and 3 (i.e., 1: NT women with anxiety disorders; 3: ASD with anxiety disorders), but no differences were found between group 2 and 3 (i.e., 2: BAP with anxiety disorders; 3: ASD with anxiety disorders).

Specifically, these results indicate that emotional dysregulation (i.e., particularly in the dimensions of emotional rejection, interference with goal-directed behaviour, and emotional dyscontrol) distinguishes NT women with anxiety from women with autistic traits. Conversely, the similarity between Groups 2 and 3 suggests that women with BAP share a profile of emotional regulation difficulties comparable to that of women with ASD. This supports our hypothesis that anxiety may mask core ASD symptoms in women, contributing to diagnostic challenges. Moreover, the slightly higher scores observed in Group 2 on some

subscales reinforce the notion that emotional dysregulation could act as a transdiagnostic factor influencing both anxiety and autistic traits.

Our findings revealed that emotional dysregulation plays a critical role in differentiating neurotypical women with anxiety disorders from women with autistic traits. Specifically, significant differences emerged between Group 1 (i.e., NT with anxiety disorders) and Group 3 (i.e., ASD with anxiety disorders) in dimensions such as emotional rejection, interference with goal-directed behaviour, and emotional dyscontrol, as well as in the total dysregulation score. In contrast, no significant differences were observed between Group 2 (BAP with anxiety disorders) and Group 3, suggesting that women with a broad autism phenotype exhibit a pattern of emotional regulation difficulties comparable to that of women with ASD. This similarity reinforces the hypothesis that anxiety may obscure core ASD symptoms in women, complicating differential diagnosis. Moreover, the slightly higher scores in Group 2 on some subscales indicate that emotional dysregulation could act as a trans-diagnostic factor influencing both anxiety and autistic traits. These results are consistent with previous research identifying emotional dysregulation as a determinant of anxious experiences in autistic individuals (e.g., Dell’Osso et al., 2023), and highlight its potential role in the underdiagnosis of ASD among women.

Clinically, these findings highlight the need to integrate emotion regulation assessments into diagnostic and intervention frameworks for women presenting with anxiety symptoms. The overlap between anxiety and autistic traits found in the present study (i.e., particularly in the context of emotional dysregulation) suggested that conventional screening tools may overlook subtle indicators of ASD in women. For it, we think that a trans-diagnostic approach that includes measures of emotion regulation, intolerance to uncertainty, and ruminative thinking could improve early detection and reduce misdiagnosis. Future research should focus on validating these markers in larger

and more heterogeneous samples, examining their predictive value for ASD diagnosis, and exploring whether targeted interventions aimed at enhancing emotion regulation can mitigate anxiety and improve adaptive functioning. Longitudinal studies are also warranted to determine whether these patterns remain stable across developmental stages or change over time, which would inform personalized treatment strategies and preventive measures.

This could indicate that emotional dysregulation may be at the root of anxiety disorders that significantly affect both women with BAP and ASD.

The development and maintenance of anxiety are also significantly influenced by the intolerance to uncertainty exhibited by autistic individuals (Jenkinson et al., 2020), which is related to sensory sensitivity (Wigham et al., 2015) and emotional regulation (Cai et al., 2018). The literature has suggested that people with autism exhibit more repetitive negative thoughts (i.e., rumination) than people without autism (e.g., Crane et al., 2013; Gotham et al., 2014; Keenan et al., 2018), which, in turn, could increase anxiety levels.

Emotional dysregulation is often associated with irrational beliefs. Autistic individuals may experience incomprehension and frustration due to their limitations in assessing or interpreting the responses of others, which may be explained by their amplified emotional responses and poor emotional control, which would also increase anxiety.

Our working hypothesis is that part of the underdiagnosis of ASD in women is due to the possible differentiation of symptoms between men and women and the masking of the main symptoms in the latter. In particular, negative stressful experiences may result from a misinterpretation of ASD symptoms or inadequate demands, which may contribute to the presence of anxiety disorders at an early age. According to the literature, girls show more signs of internalization of ASD and boys show more externalizing symptoms (Solomon et al., 2012), which would be consistent with high levels of anxiety disorders in women with ASD or with BAP. Emotional dysregulation and anxiety attacks can be confused with each other, but they are actually two different processes that may have different causes (Tacchini and Vismara, 2019), although more research is needed to establish the possible etiology and underlying mechanisms.

Limitations and Future Perspectives

For it, these findings should be interpreted with caution due to methodological constraints. The limited number of participants and the recruitment strategy (i.e., based on voluntary participation and convenience sampling) may have introduced selection bias and reduced statistical power, which restricts the generalizability of the results. This limitation is particularly relevant when examining subtle differences between BAP and ASD groups, as non-significant outcomes may reflect insufficient sample size rather than true equivalence. Additionally, the hetero-

geneity within groups and reliance on self-report measures could have affected the precision of emotional dysregulation and anxiety assessments.

Addressing these limitations is essential not only for improving the robustness of future research but also for advancing clinical practice. The restricted sample size and recruitment strategy limited us for generalize findings and to identify subtle diagnostic markers that differentiate BAP from ASD in women. Future studies should therefore prioritize multi-site recruitment and stratified sampling to ensure diversity in age, socioeconomic status, and cultural background. Moreover, standardized diagnostic procedures should incorporate trans-diagnostic variables (i.e., such as emotion regulation, intolerance to uncertainty, and rumination, that certainly emerged as relevant in our study). These factors could inform the development of new diagnostic tools or the refinement of existing ones, enabling clinicians to detect autism in women earlier and more accurately. Ultimately, integrating these dimensions into predictive models may reduce misdiagnosis, improve treatment planning, and support personalized interventions tailored to the unique profiles of autistic women. For it, future research should address these limitations by employing larger, more representative samples and standardized diagnostic procedures, enabling more robust conclusions and the development of predictive models with greater external validity.

Despite these limitations, this study represents an important first step toward addressing a research gap that has received little attention related with the role of anxiety and emotional regulation in the diagnostic process for women with ASD. By highlighting the overlap between anxiety symptoms and autistic traits, our findings may have contributed to a deeper understanding of the unique clinical profiles of women on the spectrum. This knowledge is essential for developing diagnostic frameworks and screening tools that are sensitive to female presentations of autism, which often differ from traditional male-based models. Establishing these foundations will enable future research to refine diagnostic criteria, improve early detection, and reduce the risk of misdiagnosis or delayed diagnosis in women. We think that ultimately, this work may open a pathway for creating evidence-based, gender-informed diagnostic instruments that can support more accurate identification and tailored interventions for autistic women.

5. Conclusions

The aim of this study is to analyze the possibility that anxiety symptoms mask autistic traits in female university students. To this end, the relationship between clinically significant variables and different anxiety disorders (i.e., social, separation, generalized, or panic disorders) in neurotypical women without autistic traits was explored. The combinations are more confusing in the case of women with autistic traits, probably due to the great heterogeneity of the

cases and the small number of participants. However, the clinical profile of women in the BAP and ASD groups is very similar to that of NT women with anxiety disorders. This may lead to the conclusion that there may be a certain number of undiagnosed cases among women in the BAP group, either due to the confounding effect of the various symptoms (i.e., which may increase the risk of receiving other diagnoses) or due to fear of the stigma associated with the diagnosis, which in many cases leads to the concealment of symptoms through camouflage.

In summary, this study provides preliminary evidence that anxiety and emotional dysregulation manifest differently in neurotypical women compared to women with autistic traits, supporting the hypothesis that anxiety may mask core ASD symptoms in females. Our findings may indicate that emotional dysregulation (i.e., particularly difficulties in emotional control and rejection along with intolerance to uncertainty and ruminative thinking), may be key factors in understanding these differences. These patterns may have important implications for clinical practice, as they highlight the need for diagnostic frameworks that incorporate transdiagnostic variables beyond traditional symptom-based criteria. However, it is important to note that the possible reasons for the onset and maintenance of anxiety appear to follow distinct patterns in neurotypical women and women with autistic traits. Further research is needed to confirm these differential profiles and their impact on the ASD diagnostic process. Future studies should aim to increase sample size, homogenize groups of women with autistic traits, and expand the age range of participants to verify symptom stability or developmental evolution. Despite these limitations, this work represents an essential first step toward addressing a critical gap in the literature and lays the foundation for developing gender-sensitive diagnostic tools that can improve early detection and reduce misdiagnosis in women with ASD.

Availability of Data and Materials

Fully anonymised data will be made available on request to the corresponding author.

Author Contributions

FAM and YAE designed research; YAE, ENP and MFLR performed research; FAM and YAE analysed data; FAM, YAE, ENP and MFLR wrote the paper. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

This study was conducted in accordance with the ethical guidelines of the Declaration of Helsinki and approved by the Human Research Ethics Committee of the University of Valencia on 9 May 2024 with reference number 2023-

PSILOG-3154492. All participants gave their informed consent to participate in the study before doing so.

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Conflicts of Interest

The authors declare no conflicts of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at <https://doi.org/10.31083/BP45494>.

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