

# The influence of gender on social anxiety spectrum symptoms in a sample of university students

## *L'influenza del genere sui sintomi dello spettro d'ansia sociale in un campione di studenti universitari*

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**SUMMARY. Background.** The aim of the study was to explore social anxiety spectrum gender differences, in a sample of university students. **Materials and methods.** Overall, 823 University of Pisa students were assessed by Social Anxiety Spectrum Self-Report Questionnaire (SHY-SR). Using a total score of 68 as the optimal diagnostic threshold, we classified students into two groups with levels of severity: low scorers (<68 items) and high scorers (≥68 items). **Results.** Among females there was a significant higher rate of high scorers than males (32.5% vs 25.3%). Among the 13 most endorsed items (>60%), significant gender differences emerged for 6 items: females reported higher rates of items related to "Performance fears", that seemed to confirm the new DSM-5 specifier named "Performance only", while males reported higher rate in a single item related to "Behavioural inhibition". Females showed a significant higher total score and "Specific anxieties and phobic features" and "Interpersonal sensitivity" domain scores compared to males, in low severity subgroup, and males showed significant higher "Social phobic traits during childhood and adolescence" and "Behavioural inhibition and somatic symptoms" domain scores compared to females in the high severity subgroup. Finally, rate of individuals declaring to consume alcohol was significantly higher in males than females. **Conclusions.** Among university students, social anxiety spectrum seems to be more frequent in females than males. In males, social anxiety spectrum is more frequently associated with an early onset, behavioural inhibition and somatic symptoms and, consequently, with higher severity.

**KEY WORDS:** social anxiety spectrum, gender, university students, DSM-5.

**RIASSUNTO. Scopo.** Valutare in un campione di studenti universitari le differenze di genere nella frequenza di sintomi dello spettro d'ansia sociale. **Materiali e metodi.** Un campione di 823 studenti è stato valutato con il questionario per lo spettro d'ansia sociale nella versione autosomministrata (SHY-SR). Utilizzando il punteggio di 68 come valore ottimale di soglia diagnostica, il campione è stato classificato in due gruppi: un gruppo definito "low scorers" (<68 item) e uno definito "high scorers" (≥68 item). **Risultati.** Tra le femmine è stata evidenziata una percentuale significativamente superiore di "high scorers" rispetto ai maschi (32,5% vs 25,3%). Tra i 13 item risultati più frequenti (>60%), sono emerse delle differenze di genere significative per 6 item: le femmine presentavano una maggiore presenza di item relativi al "Timore di effettuare una performace", che sembrerebbe confermare il nuovo specificatore del DSM-5 per il disturbo d'ansia sociale detto "Performance-only", mentre i maschi presentavano una maggior frequenza in un unico item relativo all' "Inibizione Comportamentale". Nel sottogruppo di "low scorers" le femmine avevano ottenuto punteggi significativamente superiori sia nel totale che nei domini relativi ad "Ansie Specifiche e Sintomi Fobici" e alla "Sensitività Interpersonale" se confrontati con il gruppo dei maschi mentre nel sotto gruppo di "high scorers" i maschi presentavano punteggi significativamente superiori nei domini relativi a "Tratti social-fobici" durante l'infanzia e l'adolescenza" e a "Inibizione Comportamentale e Sintomi Somatici" rispetto al gruppo delle femmine. Infine, la percentuale di individui che hanno dichiarato di consumare alcol era significativamente superiore nei maschi rispetto alle femmine. **Conclusioni.** Nella categoria degli studenti universitari, lo spettro d'ansia sociale sembra essere più frequente nel genere femminile rispetto a quello maschile. Nei maschi, lo spettro d'ansia sociale è più frequentemente associato con un esordio precoce, inibizione comportamentale e sintomi somatici, e, di conseguenza, con una maggiore gravità.

**PAROLE CHIAVE:** spettro d'ansia sociale, genere, studenti universitari, DSM-5.

### INTRODUCTION

Social anxiety disorder (SAD) is characterized by a marked and intense fear of social situations in which the pa-

tient may be scrutinized by others<sup>1</sup>. Generally, SAD onset occurs in youth, even in childhood, and it shows a chronic course that critically impairs the quality of life. The 12-month prevalence of SAD in the United States is approximately

7%, while median prevalence in Europe is 2.3 %<sup>1</sup>. Comorbidity with anxiety and mood disorders<sup>2,3</sup> is common in patients with SAD. In recent researches focusing on prevalence rates of SAD among university students, frequency rates of social anxiety disorder ranged from about 10% to 16%<sup>4,5</sup>.

A wide range of studies highlights peculiar patterns of gender differences in SAD prevalence. While epidemiological studies have shown that SAD is 1.1 to 2.6 times more frequent in females, in clinical samples the relationship between genders is reported being close to 1.0<sup>6</sup>. Some authors argued that social and cultural factors could be involved in these patterns: traits like submissive behaviours and shyness are more likely to be accepted in females, thus leading to fewer health-care seeking<sup>7-9</sup>.

Interest in understanding gender related differences of core features of SAD is increasing because of their treatment implications<sup>10-12</sup>.

Wittchen et al.<sup>13</sup> reported a higher prevalence of specific items among females (eating/drinking in public, participating in social events, social talk, doing thing in front of other people, being the center of attention). The DSM-5 have eliminated distinctions in generalized and non-generalized subtype of SAD, including a "performance only" specifier, given that the rationale for the distinction between the two above subtypes rather than considering them different levels of severity of the same disorder was questionable<sup>14,15</sup>. Data on gender distribution according to the new DSM-5 specifier (focused on the thematic content of social fears) are inconsistent in the literature. Some studies have reported that compared with other content areas, performance or public speaking fears more often occur in the absence of other social fears<sup>16,17</sup>. More recently, in a wide sample from 18 countries, females show higher levels of fear in interactions with the opposite sex, criticism and embarrassment, and talking to people in authority<sup>18</sup>. Among clinical samples, some studies have not highlighted significant gender differences<sup>18-20</sup>. On the contrary, Turk et al.<sup>11</sup> have reported that females had greater fear than men while talking to authority, acting/performing/giving a talk in front of an audience, working while being observed, entering a room when others are already seated, being the center of attention, speaking up at a meeting, expressing disagreement or disapproval to people they do not know very well, giving a report to a group, and giving a party, while men show more fear in urinating in public bathrooms and returning goods to a store.

In this framework, Dell'Osso et al.<sup>21</sup> in a high-school student sample have shown that SAD symptoms were more frequent among females, especially those related to interpersonal sensitivity. Recently epidemiological studies focusing on SAD gender differences have confirmed a higher prevalence in females than in men<sup>10,22,23</sup>, and found significant gender differences in comorbidity with other psychiatric disorders, marital status, quality of life and employment.

Results have suggested that women generally experience more distress than men and that comorbidity with depression and internalizing disorders is more frequent, while SAD in male is more frequently comorbid with externalizing disorders and substance use in order to cope with social stressors<sup>10,23</sup> (main SAD symptoms differences according to gender are summarized in Table 1).

In the present study, we aimed to explore gender differences in frequency of symptoms of social anxiety in a sample

of university students, within the conceptual framework of new DSM-5 classification of SAD subtypes. For this purpose, we used a validated questionnaire named Social Phobia Spectrum-Self-Report (SHY-SR)<sup>24</sup>. This instrument reflects a concept of social anxiety spectrum that spans from shyness to sad and includes full-blown and typical as well as subclinical and atypical presentations, isolated signs and symptoms as well as avoidant personality traits. Such an approach may have important implications for identifying subclinical manifestations that never attain full syndrome expression but, nevertheless, may be responsible for maladjustment, creating a vulnerability to the emergence of related forms of psychopathology<sup>8</sup>.

## MATERIALS AND METHODS

### Materials

The survey was conducted from May to July 2013 upon agreement with University of Pisa Institutional Governance (Rectorate). Participants in the study were from Pisa's Athenaeum and were enrolled from students of the first three years of the following four undergraduate courses: social sciences, scientific sciences, humanistic area course and health area courses. Overall, 823 individuals volunteered to complete an on-line anonymous form of SHY-SR. They also received a description of purposes of this study. Volunteers did not receive any kind of payment or complementary gift for participating in the survey. In addition to the questionnaire, an appropriate self-report form was used to collect socio-demographic variables. The mail provided students with a telephone number of a Listening-Center managed by two psychologists of the University of Pisa, in case some student needed a personal contact with a health care professional for additional questions or information. An informed consent was also obtained contextually to the material sent on-line to each participant. Data were retrieved in a database for statistical analyses.

### Methods

#### Instruments

Subjects were assessed by the Social Phobia Spectrum-Self-Report (SHY-SR), a self-administered questionnaire derived from the Structured Clinical Interview for the Social Phobia Spectrum (SCI-SHY), with established psychometric properties and designed to explore frequency of social anxiety symptoms across individual's lifespan<sup>24</sup>. It consists of 168 items grouped into five domains: 1) the "childhood and adolescence social anxiety features" (CA) domain, which explores fear and avoidance of social situations and somatic symptoms in early age; 2) the "interpersonal sensitivity" (IPS) domain, which is focused on discomfort in interpersonal relations and in being the center of attention, hypersensitivity to scrutiny and criticism, low self-esteem; 3) the "behavioural inhibition and somatic symptoms" (BI), which explore the presence of inhibited behaviors (i.e. speaking softly, difficulties in looking others straight in the eye, frequently apologizing) and physical symptoms typically associated with social anxiety (i.e. trembling, blushing, sweating); 4) the "specific phobias" (SP) domain, which is about fear, avoidance and anticipatory anxiety related to social situations and performances (i.e. public speaking, eating/drinking/walking/driving in public, going to parties, meeting people in authority).

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The questionnaire also includes an appendix (Domain 5) on substance abuse that is frequently associated with social anxiety<sup>25</sup>. The SHY-SR was derived from the Structured Clinical Interview for Social anxiety spectrum by modifying the format and the instructions to make the instrument suitable for self-administration. The SHY-SR is comprised of dichotomous (yes/no) items; thus, the total score and the domain scores are obtained by counting the number of items endorsed.

An additional form, appropriately designed for the purpose of this study, was also used to collect individual's socio-demographic variables

Thresholds for SHY-SR low and high scorers

In an our previous study a cut-off of the SHY-SR total score was determined by using the Receiver Operating characteristic Curve (ROC) analysis in order to characterize individuals with low and high levels of social anxiety<sup>8,24</sup>. The analysis indicated a score of 68 as the optimal diagnostic threshold balancing sensitivity and specificity (84.8% and 85.6% respectively). Applying this cut-off score to the present study sample, we classified students into two groups: low scorers (less than 68 items endorsed) and high scorers (68 items or more).

Statistical analyses

Chi-square tests (or Fisher exact tests, when appropriate) were utilized to compare genders on categorical variables. Two-way multivariate analysis of variance (MANOVA) models were performed in order to explore the main effects of severity level (<68 vs =68 scores), of presence-absence of physical symptoms during childhood or adolescence (SHY-SR item 4), of demographic characteristics and their possible interactions with gender on the five SHY-SR domains scores defined as outcome variables.

Table 1. Main differences in Social Anxiety Disorder features according to gender, based on relevant literature (references)

Social Anxiety Disorder Features	Males	Females
Comorbidity with internalizing disorders <sup>14, 27</sup>	-	+
Comorbidity with externalizing disorders <sup>14</sup>	+	-
Substance use <sup>14</sup>	+	-
Higher stress levels and lower quality of life <sup>27</sup>	-	+
Interpersonal sensitivity <sup>22, 25</sup>	-	+
Fear of performance related tasks <sup>15, 17, 25</sup>	-	+
Fear of interaction with opposite sex <sup>22</sup>	-	+
Fear of talking to authority <sup>15, 22</sup>	-	+
Marital status (have been married) <sup>27</sup>	-	+
Employed status <sup>27</sup>	+	-

RESULTS

A total of 823 students were ascertained. Of these, 499 (60.6%) were females and 324 (39.4%) were males. The age of the subjects ranged from 18 to 29 years old (mean age was 21.20 ±1.96). A SHY-SR total score above the diagnostic threshold previously described has been reported by 244

(29.65%) subjects, with females showing a significant higher rate than males 162 (32.5%) vs 82 (25.3%), (p=.034). Furthermore, among females there was a higher rate of positive assessment for the project (87.4 vs 81.1%), than males.

Males showed significantly higher rates of endorsement than females for 12 items, vice versa, females showed significantly higher rates for 57 items. As shown in Table 2, rate of endorsement was above 60% for 13 items.

Significant gender differences emerged for 6 items, with males reporting higher rates only for item #1: "When you were a child or an adolescent, do you remember or have you ever been told that you were very shy?" and females for item #26 "...You were physically unattractive?", item#104 "...When performing in front of an audience?", item #105

Table 2. Gender differences in the rates of the 13 most endorsed (>60%) items

Item	Total %	Males %	Females %	p
1 - Were very shy	63.7	69.1	60.1	<b>.011</b>
9 - Felt embarrassed and uncomfortable speaking with people you didn't know very well?	66.3	66.4	66.3	1.000
11 - When you had to buy something or ask someone for information, did you prefer to have someone else do it for you?	62.0	61.7	62.1	.967
14 - Felt that the fear of being judged by others affected your relationships?	60.0	61.1	59.3	.660
26 - You were physically unattractive?	64.3	59.3	67.5	<b>.019</b>
36 - More comfortable in small groups?	71.0	71.3	70.7	.926
103 - When speaking, singing or dancing in front of others?	63.3	63.0	63.5	.928
104 - When performing in front of an audience?	62.5	58.0	65.3	<b>.041</b>
105 - When taking an oral examination?	64.0	52.2	71.7	<b>&lt;.001</b>
108 - That you might black out while performing or taking an oral examination?	70.5	58.3	78.4	<b>&lt;.001</b>
109 - Do you worry a lot about having to perform in public or taking an oral examination, for any of these reasons?	60.8	50.9	67.1	<b>&lt;.001</b>
146 - Ask someone you liked to go out on a date, like to a movie, to dinner or to a club?	61.4	65.4	58.7	.063
150 - Express romantic feelings to someone you liked?	70.1	68.5	71.1	.468

"...When taking an oral examination?", item #108 "...That you might black out while performing or taking an oral examination?" and item #109 "Do you worry a lot about having to perform in public or taking an oral examination, for any of these reasons?".

Significant gender difference emerged for 8 (2 higher in males, 6 higher in females) out of 20 items exploring "avoidant behavior" (Table 3).

Table 3. Gender differences in items investigating avoidance

Item	Total %	Males %	Females %	p
3 - Avoided or wished you could avoid school social activities, such as eating or playing together during recess or playing sports?	19.9	20.1	19.8	1.000
7 - Avoided or wanted to avoid social activities outside of school such as parties, sports, or playing with other children?	21.4	26.5	18.0	<b>.005</b>
40 - Have you often avoided, if possible, disagreeing with or expressing disapproval to others?	39.6	36.7	41.5	.197
71 - Do you avoid, or wish you could avoid, talking on the telephone, for any of these reasons?	37.5	38.6	36.9	.674
76 - Have you often avoided or wished you could avoid speaking up at a meeting or giving a report, for these reasons?	29.5	21.6	34.7	<b>&lt;.001</b>
77 - Have you avoided promotions because of the fear of participating in meetings or giving reports to even a small group?	7.7	5.6	9.0	.091
84 - Have you often avoided writing or signing official documents in front of other people?	6.4	6.8	6.2	.854
89 - Have you often avoided using a public bathroom for these reasons?	25.4	21.3	28.1	<b>.036</b>
97 - Have you often avoided or wished you could avoid eating or drinking in front of other people, for these reasons?	9.0	5.2	11.4	<b>.004</b>
102 - Have you often avoided or wished you could avoid working in front of other people for these reasons?	19.2	15.7	21.4	.053

(Segue)

(Segue) Table 3.

Item	Total %	Males %	Females %	p
110 - Have you often avoided preparing for a performance or for an oral examination, for these reasons?	21.0	15.7	24.4	<b>.004</b>
111 - Have you often avoided or wished you could avoid performing in front of an audience or taking an oral examination, for these reasons?	41.3	32.4	47.1	<b>&lt;.001</b>
118 - Have you often avoided or wished you could avoid walking or driving, for these reasons?	11.1	10.5	11.4	.763
122 - Have you often avoided or wished you could avoid entering a room full of people for these reasons?	30.9	28.4	32.5	.247
129 - Have you often avoided or wished you could avoid meeting strangers, for these reasons?	14.2	13.9	14.4	.909
134 - Have you often avoided or wished you could avoid such situations?	16.3	10.5	20.0	<b>&lt;.001</b>
143 - Have you often avoided or wished you could avoid going to parties, for these reasons?	21.4	21.9	21.0	.833
144 - Have you often avoided or wished you could avoid giving parties for these reasons?	21.9	24.1	20.4	.252
154 - Have you often avoided or wished you could avoid dating or any of these activities?	28.2	29.6	27.3	.509
162 - Have you often avoided or wished you could avoid going shopping for these reasons?	8.6	11.4	4.2	<b>.030</b>

In particular, males reported higher rates on item #7 "Avoided or wanted to avoid social activities outside of school such as parties, sports, or playing with other children", and on item #162 "Have you often avoided or wished you could avoid going shopping for these reasons?", while females reported higher rates on item #76 "Have you often avoided or wished you could avoid speaking up at a meeting or giving a report, for these reasons?", on item #89 "Have you often avoided using a public bathroom for these reasons?", on item #97 "Have you often avoided or wished you could avoid eating or drinking in front of other people, for these reasons?", on item #110 "Have you often avoided preparing for a performance or for an oral examination, for

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these reasons?”, and on item #111 “Have you often avoided or wished you could avoid performing in front of an audience or taking an oral examination, for these reasons?” and on item#134 “Have you often avoided or wished you could avoid such situations?”.

A two-way multivariate analysis of variance (MANOVA) utilizing Gender and Severity as predictors and the five SHY-SR domain scores as outcome variables showed a significant main effect of Gender [Pillai’s trace:  $V=0.05$ ,  $F(5,815)=7.69$ ,  $p<.001$ ] and Severity [Pillai’s trace:  $V=0.64$ ,  $F(5,815)=293.17$ ,  $p<.001$ ]. Further, a significant interaction effect emerged for Gender\*Severity [Pillai’s trace:  $V=0.02$ ,  $F(5,815)=3.83$ ,  $p=.002$ ].

Table 4 shows the results of gender comparison within the two subgroups of subjects with Lower (SHY-SR total score <68) and Higher severity (SHY-SR total score=68). Females reported significantly higher SHY-SR Total and “Specific anxieties and phobic features” domain scores than males among subjects with sub-threshold total scores. In the same group, an almost significant difference ( $p=.052$ ) emerged also for SHY-SR “Interpersonal sensitivity” domain, with females reporting higher mean scores than males. Conversely, among subjects reporting an above threshold total score, a significant gender difference emerged for “Social phobic traits during childhood and adolescence” and “Behavioral inhibition and somatic symptoms” domains, with males reporting higher scores than females.

The two-way MANOVA model considering Gender and SHY-SR item 4 “physical symptoms during childhood or adolescence” as predictors and the five SHY-SR domain scores as outcome variables showed significant main effects of gender [Pillai’s trace:  $V=0.02$ ,  $F(5,571)=2.78$ ,  $p<.017$ ] and SHY-SR item 4 [Pillai’s trace:  $V=0.10$ ,  $F(5,571)=12.61$ ,  $p<.001$ ], but did not show significant interaction between the two independent variables.

As displayed in Table 5, subjects reporting physical symptoms in childhood or adolescence showed significantly high-

er SHY-SR total and domains scores with respect to those without.

Moreover, significantly higher rates of endorsement of all the items exploring the presence of actual physical symptoms (SHY-SR items 58-64: “blushing”, “trembling”, “feeling the heart pounding”, “excessive sweating”, “experiencing dizziness”, “nausea, diarrhoea, stomach ache” and “urge to urinate”) emerged in subjects reporting symptoms during childhood or adolescence with respect to those without (Table 6).

Finally, as shown in Table 7, among a list of substances of potential abuse, alcohol consume was significantly more frequent among males than females (males 58% vs females 50%,  $p<.03$ ).

**DISCUSSION**

In two our previous studies, we found that social anxiety symptoms were broadly represented among young adult populations of high school<sup>22</sup> and university students<sup>26</sup>.

In both studies, significant functional impairment, defined by school avoidance and/or learning difficulties was associated with presence of either low or high levels of social anxiety symptoms. In the current study, carried out in a sample of 823 university students, we confirmed the high prevalence rate of social anxiety symptoms found previously (29.7% of subjects reporting a SHY-SR total score above the diagnostic threshold)<sup>26</sup>.

Overall, females showed a significant higher rate of social anxiety symptoms than males (32.5% vs 25.3%). Among the 13 most endorsed (>60%) items, a significant gender differences emerged for 6 items. In particular, males reported higher rates of “Social phobic traits during childhood and adolescence” and females higher rates of items related to “performance fears”. In general, these results are in line with those evidenced in previous both epidemiological and clinical studies<sup>11,13,18</sup>. In particular, in this study, the new DSM-5<sup>1</sup> specifier

Table 4. Gender comparison on SHY-SR total and domains scores in Low and High Severity subgroups

Low Severity (total score <68)	Males (N=242) Mean±SD	Females (N=337) Mean±SD	p
1 - Social phobic traits during childhood and adolescence	3.31±2.27	3.08±2.31	.230
2 - Interpersonal sensitivity	8.67±4.55	9.43±4.72	.052
3 - Behavioral inhibition and somatic symptoms	4.53±3.01	5.01±3.11	.066
4 - Specific anxieties and phobic features	18.72±10.66	23.21±10.99	<.001
5 - Appendix for substances	1.05±1.10	0.93±1.14	.212
Total	35.22±17.37	40.73±16.95	<.001
High Severity (total score ≥68)	Males (N=82) Mean±SD	Females (N=162) Mean±SD	p
1 - Social phobic traits during childhood and adolescence	6.50±2.37	5.72±2.75	.030
2 - Interpersonal sensitivity	19.46±4.50	18.81±4.51	.290
3 - Behavioral inhibition and somatic symptoms	12.44±3.70	10.78±3.83	.001
4 - Specific anxieties and phobic features	54.74±13.80	55.48±12.97	.684
5 - Appendix for substances	1.46±1.17	1.54±1.37	.679
Total	93.15±20.61	90.79±19.23	.379

Table 5. SHY-SR total and domains scores: subjects with physical symptoms during childhood/adolescence vs those without

	Physical Symp. (N=153) Mean±SD	No-Phys. Symp. (N=670) Mean±SD	p
1 - Social phobic traits during childhood and adolescence	6.42±2.87	3.46±2.37	<.001
2 - Interpersonal sensitivity	16.06±6.83	11.14±6.02	<.001
3 - Behavioral inhibition and somatic symptoms	9.76±4.84	6.05±4.08	<.001
4 - Specific anxieties and phobic features	42.85±22.12	28.77±17.78	<.001
5 - Appendix for substances	1.33±1.24	1.10±1.19	.035
Total	75.09±33.84	49.41±27.24	<.001

Table 6. Rates of endorsement of actual physical symptoms: subjects with physical symptoms during childhood/adolescence vs those without

Actual Physical Symptoms	Physical Symp. Childhood/adol. (N=153) % (N)	No-Phys. Symp. Childhood/adol. (N=670) % (N)	p
58 - Blushing	62.1 (95)	48.4 (324)	.003
59 - Trembling	42.5 (65)	16.9 (113)	<.001
60 - Hearth pounding	72.5 (111)	48.2 (323)	<.001
61 - Excessive sweating	40.5 (62)	25.8 (173)	<.001
62 - Feeling dizzy	17.6 (27)	5.5 (37)	<.001
63 - Nausea, diarrhea or stomach ache	47.7 (73)	10.9 (73)	<.001
64 - Urge to urinate	26.8 (41)	9.1 (61)	<.001

Table 7. Gender differences in the endorsement rates of items exploring substance use

Item	Total %	Males %	Females %	p
163 - Tobacco	34.0	32.1	35.3	.388
164 - Alcohol	53.2	58.0	50.1	.031
165 - Anti-anxiety drugs (for example, valium, Librium, Xanax, etc.)	4.7	3.7	5.4	.338
166 - Marijuana	18.7	19.4	18.2	.732
167 - Street drugs (for example, cocaine, amphetamines, etc.)	2.4	1.9	2.8	.524
168 - Other drugs (for example, beta blockers such as Atenolol, Tenormin, Propranolol, Inderal)	1.0	0.6	1.2	.491

“performance only” subtype is likely to be more represented among females. Such a specifier refers to the situation in which patient’s fear is restricted to speaking or performing in public. Performance fears could manifest at work, school or academic settings in which regular presentations are required, causing clinically significant distress or impairment in social, occupational or other important areas of functioning<sup>1</sup>.

Such an association is further confirmed by the fact that females reported higher rates on item related to performance avoidance (Table 3).

We conducted a gender comparison within the two subgroups of SHY-SR low (<68) and high (=68) scorers. We found that among low scorers, females showed higher SHY-SR total scores, in particular as far as “Specific anxieties and phobic features” and “Interpersonal sensitivity” domains are concerned. This latter association between female gender and interpersonal sensitivity, a well-known core feature of social anxiety disorder often associated with poor academic performance<sup>27</sup>, is consistent with other previous observations<sup>22,28,29</sup>. Among high scorers (=68), males had higher levels of “Social phobic traits during childhood and adolescence” and “Behavioural inhibition and somatic symptoms” domains. These results suggest that while in females there is a preponderance of cognitive symptoms, behavioural and physical symptoms are more represented in males, as well as an early onset of the disorder. It is important to note the well-established notion in literature that behavioural inhibition and somatic symptoms are the typical early manifestations of social anxiety and potential predictors of adult form of the disorder<sup>30-33</sup>. Moreover, early onset, behavioural inhibition and somatic symptoms are also related to higher severity of SAD<sup>34-36</sup>.

We found that subjects reporting physical symptoms in childhood or adolescence showed significantly higher levels of actual physical symptoms and higher SHY-SR total and domains scores (Tables 5 and 6). These findings corroborate the relationship between somatic symptoms and severity of anxiety symptomatology<sup>34</sup>.

In addition to, we found a higher prevalence of alcohol use related to social anxiety symptoms among males. This result is consistent with epidemiological studies that highlighted a higher comorbidity of SAD and substance use in order to cope with social stressors in male gender<sup>10,23</sup>, as well as a greater tendency to alcohol drinking in male college students with SAD symptoms<sup>37-40</sup>. Alcohol is confirmed to be as a major complication of social anxiety even in its subthreshold expressions, as suggested in a recent study conducted among Italian students<sup>41</sup>. From a preventive perspective, it should be interesting to explore whether there is a correlation between alcohol use and social anxiety symptoms in non-clinical populations of youngsters, such as university students, and their potential clinical implications<sup>41</sup>.

Despite several strengths of our study, there are some unavoidable limitations. First, this is not an epidemiological study and, therefore, our data are not representative of the general population. Furthermore the fact that this study was carried out in a single university could restrict the generalizability of our results to the entire population of Italian university population. The study may contain a selection bias due the possible exclusion from the study of those subjects who left school or university because of severe social anxiety symptoms.

## Social anxiety spectrum among university students

### CONCLUSIONS

In conclusion, our study confirms the wide spread of social anxiety symptoms in young adulthood. Among university students, in general, social anxiety spectrum symptoms seem to be more likely to occur in females than in males. However, in males, social anxiety spectrum is more frequently associated with an early onset, behavioural inhibition and somatic symptoms and, consequently, with higher severity. Further studies are warranted to explore more in detail whether in learning settings where high levels of performance are required, social anxiety may be a condition that obstacles complete achievement by a significant proportion of students.

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