



# Is There any Difference Between DSM-5 performance-only Specifier and Social Anxiety Disorder? Results from the Young-HUNT3 Study

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## Abstract

With the publication of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, APA, 2013), the diagnostic criteria for social anxiety disorder (SAD) changed; the generalized SAD specifier was removed, and a performance-only specifier was introduced. Despite growing awareness and understanding of the DSM-5 performance-only type specifier, information about its key aspects is lacking. Exploring a large, population-based adolescent sample ( $N=8,216$ ), we identified three SAD classes: full spectrum SAD, subclinical SAD, and the performance-only specifier. The three groups were compared across a broad range of parameters. The results indicate that adolescents with the performance-only specifier differed significantly from both the full spectrum and subclinical groups on most clinical indexes. By contrast, the subclinical and full spectrum groups differed less from each other on most parameters. Thus, there were specific aspects of the performance-only specifier group that differentiate this condition from subclinical and clinical SAD in our sample of adolescents. These data indicate that the specifier in the new version of the DSM may be valid in adolescents, and that policymakers and clinicians should not disregard adolescents who show subclinical SAD levels with performance-related challenges. Furthermore, researchers and clinicians should consider the extent to which adolescents with the SAD performance-only specifier may need a different treatment approach.

**Keywords** Social anxiety disorder · Performance-only specifier · Adolescents · Mental health

With the publication of the DSM-5 (APA, 2013), the social anxiety disorder (SAD) diagnostic criteria changed. The poorly defined generalized SAD specifier was removed, and a performance-only specifier was introduced to replace non-generalized SAD. According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). (DSM-5, APA, 2013, pp. 203), this specifier is used “*if the fear is restricted to speaking or performing in public*” and “*Individuals with*

*performance-only social anxiety disorder do not fear or avoid non-performance social situations*”. This clarified the specifier’s definition. Although some evidence for the performance-only specifier has emerged among adult samples (Crome, et al., 2015; Peyre, et al., 2016), little research on this criterion has been conducted with adolescents. In one face-to-face interview study with a large representative sample ( $N=10,123$ ) of U.S. adolescents, Burstein et al. (2011) estimated a 0.8% prevalence of the DSM-5 performance-only subtype. In another community adolescent and young adult sample ( $N=3,021$ ; age 14–34 years), Knappe et al. (2010) found that 1.4% reported significant avoidance regarding “*isolated speaking in front of others*”. Additional studies have addressed prevalence of the performance-only subtype in adolescents (Fuentes-Rodriguez, Garcia-Lopez, & Garcia-Trujillo, 2018; Kerns, et al., 2013; Kodal, et al., 2017). In a sample of 204 treatment-seeking children and adolescents aged 6–19 years, Kerns et al. (2013) used the Anxiety Disorders Interview Schedule for DSM-IV, child version (ADIS-C) clinical interview (Silverman & Albano, 1996) to examine six performance situations (Answering

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questions in class, Giving a report or reading aloud in front of the class, Writing on the chalkboard, Asking the teacher questions or for help, Speaking to an adult, and Musical or athletic performances). That group did not find support for the existence of a performance-only SAD subtype. However, this may have been due to the treatment-seeking nature of the sample. Using the same categorical approach as Burstein et al. (2011) and Kerns et al. (2013), Kodal et al. (2017) similarly reported a very low prevalence of a performance-only subtype among a sample of treatment-seeking young people aged 8–15 years (i.e., only 2 of 131 participants, or 1.5%). In contrast, Fuentes-Rodriguez, Garcia-Lopez, and Garcia-Trujillo (2018) found that 20.0% of their SAD-diagnosed sample ( $N=50$ ) met the criterion for the performance-only subtype ( $N=10$ ). Important differences in the Fuentes-Rodriguez study were that the authors used the ADIS child/parent version (C/P) for DSM-5, and their participants were 2–3 years older, with a mean age of 15.4 years, compared with those assessed by both Kerns et al. (2013) and Kodal et al. (2017). Also using the ADIS-C with a relatively large population-based sample of adolescents aged 13–19 years, Aune et al. (2022) reported a prevalence of 0.0012% (i.e., only 7 of 6,610 participants) fulfilled the DSM-5 SAD performance-only specifier criteria. Moreover, 3.5% of those diagnosed with SAD fulfilled the criteria for a DSM-5 performance-only specifier. According to Silverman and Ollendick (2005), the ADIS-C is considered the gold standard for assessing and diagnosing anxiety disorders among children and adolescents. The ADIS-C has three entrance questions and four additional steps for assessing specific social fears, distress, avoidance, and impairment. The ADIS-C includes a specific item examining the extent to which adolescents fear speaking and/or performing in public (e.g., Giving an oral report, Reading aloud in front of the class). Prevalence of the performance-only subtype reflects the number of “yes” responses, indicating intense fear or avoidance to this specific item. However, because the criteria require endorsing one of the three initial screening questions on the SAD section of the ADIS-C to progress to the next step, participants who fulfilled the DSM-5 performance-only specifier may have been excluded. To address this possibility, and to overcome some of the prior sampling limitations, creating and calculating a self-report index specifically assessing the DSM-5 performance-only specifier is warranted. Further, although prevalence estimates are important, relatively little is known about the specifier’s etiology or how adolescents who meet its criteria differ from those with full spectrum SAD on clinical parameters.

Comparing adolescents with the performance-only specifier with both those with full spectrum SAD and healthy controls, Fuentes-Rodriguez et al. (2018) indicated that the performance-only group was more like a healthy control

group on most parameters. Specifically, adolescents with the performance-only specifier had later onset, lower depression, social anxiety symptoms, clinical severity, and less comorbidity compared with the full spectrum SAD group. However, limited conclusions could be drawn because there were few participants ( $N=10$ ) in the performance-only group. Furthermore, general health parameters, functional impairment, resilience, friendship experiences, traumatic events, bullying, and family socioeconomic status were not assessed.

Several epidemiological studies (Demyttenaere, et al., 2007; Scott, et al., 2007) report a close relation between SAD and general health. Stein and Kean (2000) showed that SAD is related to functional impairment. Pain experience (Gureje, et al., 2008) and insomnia (Pigeon & Perlis, 2009; Sivertsen, et al., 2009) have also been strongly associated with mental health problems generally, although how these are related to SAD has been far less thoroughly explored. Two studies have examined socioeconomic status in relation to social anxiety among young people; one reported no association (Burstein, et al., 2011), and the other showed a negative correlation (Wittchen, Stein, & Kessler, 1999). Social anxiety has also been inconsistently associated with alcohol problems among adolescents (Buckner, et al., 2008; Fröjd, et al., 2011). By contrast, victimization from bullying is associated with internalizing problems like loneliness (Juvonen, et al., 2008), low self-esteem (Patchin & Hinduja, 2006), and social anxiety (Woods, et al., 2009). Bullying has been consistently related to SAD (Campbell, et al., 2013; Dempsey, et al., 2009; Pabian & Vandebosch, 2016; Ranta, et al., 2013). Yet, how these conditions may be specifically linked to various SAD presentations in adolescents has not been reported. Aune and Stiles (2009b) reported that stressful events predicted the development of SAD in a population-based sample of older children and young adolescents. However, the extent to which adolescents with the performance-only specifier have experienced stressful life events relative to those with full spectrum SAD is unknown. Finally, subclinical SAD levels among children and adolescents predict SAD development and maintenance (Aune & Stiles, 2009b), general mental health problems (Angold, Costello, & Erkanli, 1999), and substance abuse (Buckner, et al., 2008).

Nevertheless, despite growing awareness and understanding (Fuentes-Rodriguez, et al., 2018; Peyre, et al., 2016) of the DSM-5 performance-only type specifier, key information about this disorder is lacking. This warrants evaluation of how individuals with the performance-only type specifier differ from those with full spectrum SAD or may represent a subclinical group of SAD. Doing so would shed light on the phenomenology of the performance-only

specifier and provide insight into how to better manage this condition therapeutically.

Thus, the study aimed to evaluate the extent to which adolescents with the SAD performance-only specifier differ from those with subclinical or full spectrum SAD on social demographics, general health, and behavioral health parameters. Based on previous reports of both adults and adolescents, we hypothesized that those with the performance-only specifier differ significantly, demonstrating lower general health and behavior health problems, compared with those with full spectrum or subclinical SAD. In contrast, we also hypothesized that the three groups do not differ on demographic variables like age and sex, family income, and whether their parents are divorced or separated.

## Method

### Participants

The Young-HUNT3 study represents a segment of the larger, cross-sectional HUNT3 survey. Our cohort comprised students aged 13–19 years (grades 8–13) in Nord-Trøndelag County, Norway, from among a population of 10,464 adolescents. Altogether, 8,216 (78.5% of the population) adolescents completed the questionnaires. There were 6,610 (80.5% of the total participants ( $N=8,216$ )) who completed the SAD section of the Anxiety Disorders Interview Schedule for Children (ADIS-C) structured clinical interview. Nord-Trøndelag County, comprising 23 municipalities, serves as a representative sample of Norway regarding geography, industry, income source and level, age distribution, morbidity, and mortality (Holmen, et al., 2003). Norwegian schools integrate all children and adolescents (i.e., including those with learning, behavioral, and physical disabilities) (Holmen, et al., 2014).

### Procedure

Schools were the primary study sites for all three Young-HUNT surveys. In Norway, all adolescents are expected to attend junior (age 13–16 years) and senior (age 16–19 years) high schools. The principals of each of the county's 66 schools gave written consent for their school's participation. Every student attending these schools and their parents received a letter inviting them to participate, with information about the study and its intended data uses. Adolescents who were not attending school (according to county school authorities) were also invited to participate via a letter sent to their home address. Thus, the entire cohort of young people aged 13–19 years living in Nord-Trøndelag County was invited to participate. Data collection included self-report

questionnaires, a structured interview, clinical measurements, and a buccal smear. Students completed the questionnaires during school hours. The questionnaire packet was marked with a barcode without names, which the students then sealed in a blank envelope. Within a month, specially trained nurses visited each school for face-to-face interviews and measurements. Students completed the surveys within an average of 45 min. Students absent on the questionnaire day were encouraged to complete them when the nurses visited the schools. Because of the time required, the Young-HUNT3 steering committee decided not to administer the ADIS-C at seven schools, resulting in 6,610 interviews instead of 8,216. (See Holmen et al. (2014) for more detailed information regarding Young-HUNT3 study assessments and procedures.)

### Interviewer Training and Preparation

The ADIS-C interviews were conducted by four clinically experienced, registered psychiatric nurses who passed specific training for the Young-HUNT3 study. Two interviewers conducted most of the interviews, while the others served as replacements. The interviewers underwent three weeks of rigorous clinical trial training and reliability evaluation, as well as ongoing reliability checks to ensure diagnostic rigor. In addition to the three weeks of training, interviewers underwent a five-day workshop, three days of which focused on ADIS-C interviewing, led by one of the instrument's developers (W. Silverman). During this workshop, the trainees observed several ADIS-C diagnostic interview video cases, and degrees of consensus on the diagnoses were evaluated. Lack of consensus was explored, and any variance between interviewers and assessment norms was discussed and corrected. Assessment of two SAD types (generalized and nongeneralized) was emphasized. Interrater reliability was assessed based on video-recorded interviews; during the five-day workshop, the agreement based on 12 interviews was 80.0% for presence or absence of a SAD diagnosis. Fleiss' kappa was 0.571 for interrater reliability on SAD diagnosis among the four interviewers, indicating acceptable-to-high agreement. For the nongeneralized subtype, agreement was 74.3% (Fleiss' kappa = 0.483), indicating acceptable agreement. Excellent interrater reliability was revealed for the two main interviewers (who completed 70.8% of the interviews): 0.917 and 0.833 for the presence or absence of SAD diagnosis and the nongeneralized type, respectively.

During the first year of data collection, the interviewers worked with supervisors, and diagnostic reliability checks were conducted to prevent rater drift. The consensus among the four interviewers and supervisors was consistent and improved during this period. Thus, training and practice

before beginning data collection and monitoring during the study period showed satisfactory interrater reliability for SAD diagnosis (see also, Aune, et al., 2022).

## Assessments and Measurements

### Assessing Social Anxiety Disorder and Subclinical Social Anxiety Disorder

The ADIS-C, a semistructured interview schedule for the diagnosis of anxiety disorders in children and adolescents (Albano & Silverman, 1996), was employed to assess SAD and subclinical SAD. ADIS-C provides information about symptoms beyond those required for diagnosis. Although the ADIS-C was specifically developed to assess SAD according to the DSM-IV criteria, its structure also allows SAD assessment according to the DSM-5 criteria.

SAD diagnosis using the ADIS-C has high interrater reliability, from 0.92 (Silverman, et al., 2001) to 0.86 (Rapee, et al., 2005); in a Norwegian study by Aune et al. (2008), interrater reliability was 0.75. The ADIS-C has both child/adolescent and parent forms, and a composite diagnosis is usually based on both. However, parent-child concordance for both primary and general SAD diagnoses show poor kappa coefficients (Choudhury, et al., 2003; Grills and Ollendick, 2003), and it has been asserted that adolescents are the most accurate informants about their social anxiety symptoms (La Greca & Lopez, 1998). Herein, only adolescents were interviewed, using the complete SAD section of the ADIS-C.

The three initial questions of the ADIS-C social anxiety section (e.g., “when you are in certain places with other people like school, restaurants, parties, do you feel that people might think that something you do is stupid or dumb?”) were posed to all participants. If the adolescent answered “Yes” to one or more of the three screening questions, the interviewer completed the entire interview. First, the participants were asked how they think, feel, and act in 22 different situations. The pupils were asked to answer “Yes” or “No” if “you think you get more nervous or scared in these situations than other kids your age do”. The adolescents were told to answer “Yes” only if these situations “almost always make you scared or nervous”, and “No” if “it has happened just once or twice”: (i.e., “Answering questions in class”, “Oral reports or readings aloud”, and “Asking the teacher a question or asking for help”). Adolescents answering “No” to all 22 situations did not continue the interview. These participants made up the subclinical social anxiety group herein.

Adolescents met DSM-IV and DSM-5 criteria for full spectrum SAD if they endorsed a marked and persistent fear in at least one of the 22 social situations assessed and

showed both fear/avoidance/distress and an interference rating of  $\geq 4$ . Consistent with the DSM-IV (APA, 1994) and DSM-5 definitions (APA, 2013), cases of SAD included all adolescents with lifetime SAD who endorsed one or more social situations or most social situations, respectively.

### Assessing the DSM-5 Social Anxiety Disorder Performance-only Specifier (Self-report Index)

The Young-HUNT3 study questionnaire includes six items, each using a five-point Likert scale (never-seldom-sometimes-often-always) from the Social Phobia and Anxiety Inventory for Children (SPAI-C) (Aune, et al., 2008; Beidel, et al., 1995) and the Social Phobia and Anxiety Inventory (Turner, et al., 1989) self-report inventories. Applying an item analysis approach (Pather & Uys, 2008), items specifically reflecting the DSM-IV SAD criteria (Aune, et al., 2008, 2021) were selected to create a SAD self-report index. To evaluate the prevalence of the DSM-5 performance-only subtype, we created a new specific index. The DSM-5 performance-only subtype index was calculated for those who indicated “always” only on item 3 (“I feel anxious when I have to speak or read aloud in front of a group of people”) but indicated “seldom to never” on each of the five other social fear items. The six items were assessed on a five-point Likert scale (1–5). For a more detailed description of the specific items and psychometric properties of the index, see Aune et al. (2021).

### Assessing Sociodemographics

**Age and sex:** All participants provided information about their date of birth and sex.

**Family economy/income:** “How well off is your family compared to others?” (1 = worse financial situation, 2 = about the same as most others, 3 = better financial situation). A higher score indicates a better perception of the family economy compared with other families.

**Parents separated/divorced:** “Are your parents separated or divorced, or have they lived separately for more than one year?” (1 = No, 2 = Yes, they lived separately for more than one year, but they later moved back, 3 = Yes, they are divorced or separated). A higher score indicates more experience with separation and divorce among parents.

**Part of teams or clubs:** “How many teams or clubs are you part of (for example: sports team, boy/girl scouts, band, etc.)?” (1 = none, 2 = one, 3 = two or more). A higher score indicates more memberships.

## Assessing General Health

**Impairment/Disabled in any way:** “Are you disabled in any of these ways?” A functional impairment index, assessed on a four-point Likert scale (1 = no, 2 = a little, 3 = moderate, 4 = a lot), was based on five areas: motor ability impairment, vision impairment, hearing impairment, impairment due to physical illness, and impairment due to mental health problems. Higher scores indicate more severe impairment.

**Pain during school and daily activities:** “Has pain made it difficult to do daily activities at school?” and “Has pain made it difficult to do daily activities in your leisure time?”, each assessed on a three-point Likert scale (no–sometimes–often), were transformed into a pain index. Higher scores indicate more severe impairment from the pain experience.

**Insomnia:** “Had difficulty falling asleep in the evening?” and “Woke up too early and could not fall asleep again?”, each assessed on a four-point Likert scale (almost every night–often–sometimes–never). Higher scores indicate more severe difficulty sleeping.

**Self-esteem:** Rosenberg Self-Esteem Scale (RSE) short version (questions 2, 5, 7, and 10) of the 10-item RSE (Tambs & Røysamb, 2014). The correlation between the original 10-item and short four-item versions is  $r = .95$  (Tambs & Røysamb, 2014). The four items are assessed on a four-point Likert scale (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree). Higher scores indicate better self-esteem. The RSE evaluates judgment and attitude toward oneself (i.e., I have a positive attitude towards myself). The RSE and self-esteem are associated with general health and well-being, emotional functioning, eating disorders, depression, and difficulty developing positive social support networks (Amahazion, 2021).

**Resilience:** The ability to handle stress and negative experiences was measured by eight of the 28 Resilience Scale for Adolescents (READ) items (Hjemdal, et al., 2006). The original READ addresses five factors; the two factors included in the Young HUNT3 were titled ‘Social Self-efficacy’ (S-SE) (e.g., “I easily make others feel comfortable around me”) and ‘Social Support Family’ (SS-F) (e.g., “In my family we support each other”). The five response options for each range from “I totally disagree” to “I totally agree”. Lower scores indicate better resilience. The READ shows adequate psychometric properties and promising validity compared with measures of mental difficulties (Askeland & Reedtz, 2015; Hjemdal, et al., 2006).

## Assessing Behavioral Health

**Social relationships:** A social relationship index was calculated from the summed score of four items assessing: number of **Close friends:** “How many close friends do you have?”

**Include those you can speak confidentially with and who help you when you need help”;** **Visited someone you know:** “How often have you visited someone you know in the past week”; **Someone visited you:** “How often has someone visited you at home last week?”; and **Been with friends:** “How often have you been out with friends for more than two hours in a row last week?”. Each item was assessed with a Likert scale (the first item where 1 = none, 2 = one, 3 = two or more and the other three items where 1 = none, 2 = once, 3 = 2–3 times, 4 = 4 times or more). A higher summed score reflects stronger social relationships.

**Subjective well-being (SWB):** This measure reflects longer-term levels of pleasant affect, lack of unpleasant affect, and life satisfaction. A three-item version (e.g., “Thinking about your life at the moment, would you say that you by and large are satisfied with life, or are you mostly dissatisfied?”) of the SWB scale was used herein (Størksen, et al., 2005; and see Moum et al. (1990) regarding psychometric issues with the original six-item version). Each item has seven response options, ranging from “very downhearted” (= 1) to “very cheerful” (= 7) from which a score is summed. Higher scores indicate more joyfulness in life.

**Hopkins Symptom Checklist (SCL-5):** The Hopkins Symptom Checklist (SCL) measures psychological distress/mental health problems within populations. Symptoms of general anxiety and depression in the previous two weeks were measured with the five-item version (SCL-5), adapted from the 25-item SCL. This short version of the SCL-25 has shown adequate reliability (Strand, et al., 2003), though its ability to distinguish between depression and anxiety symptoms has not been shown (Strandheim, et al., 2009). Each item is rated from “not bothered” (1) to “very bothered” (4). A summed index is made from the five items.

**Loneliness:** “Do you often feel lonely?” (1 = very often, 2 = often, 3 = sometimes, 4 = seldom, 5 = seldom or never).

**Social anxiety:** A six-item index from the SPAI-C (Aune, et al., 2008; Beidel, et al., 1995) and the SPAI (Turner, et al., 1989). The six items represent the SAD criteria according to the DSM-IV and DSM-5 and predict SAD according to the DSM-IV criteria (APA, 1994) assessed by a clinical interview (Aune, et al., 2008). The six items are assessed on a five-point Likert scale (1–5), with higher scores indicating more severe symptoms.

**DSM-5 performance-only specifier:** One item from the social anxiety index (above) (“I feel anxious when I have to speak or read aloud in front of a group of people”) with Likert response options (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always).

**Trauma index:** An 11-item modified version of the Impact of Event Scale (Horowitz, Wilner, & Alvarze, 1979) (e.g., “That someone in your family has been seriously ill”, “Death of a loved one”). Each item was originally rated on

**Table 1** Descriptive statistics for health related variables. Items=no. of items included in variable, Options=no. of response options, Min - max = reported minimum/maximum score, Alpha = Cronbach's alpha for variables based on two or more items, N (%) = no. of respondents with percentages for females and males in parentheses, M (95% CI) = means with 95% confidence intervals in parentheses, and SD (SE) = standard deviations with standard errors in parentheses

Variables	Items	Options	Min – max	Alpha	N (%)	M (95% CI)	SD (SE)
<b>General Health</b>							
Rosenberg self-esteem	4	4	4–12	.82	484	9.54(9.30–9.78)	2.72 (0.124)
Females					320(66.1)	10.10(9.82–10.39)	2.60 (0.146)
Males					164(34.9)	8.43(8.03–8.84)	2.61 (0.204)
Impairment/disability	5	4	5–20	.48	457	5.98(5.83–6.12)	1.54 (0.072)
Females					293(64.1)	6.11(5.91–6.30)	1.67 (0.098)
Males					164(35.9)	5.76(5.57–5.95)	1.23 (0.096)
Pain during school / daily activities	2	3	2–6	.77	448	3.08(2.99–3.18)	1.04 (0.050)
Females					309(69.0)	3.19(3.07–3.31)	1.05 (0.060)
Males					139(31.0)	2.84(2.68–3.01)	0.99 (0.084)
Insomnia	2	3	2–8	.54	499	6.25(6.13–6.36)	1.45 (0.065)
Females					326(65.3)	6.04(5.87–6.20)	1.53 (0.085)
Males					173(34.7)	6.67(6.49–6.84)	1.38 (0.089)
Resilience, total score	8	5	8–40	.86	489	19.21(18.62–19.80)	6.64 (0.300)
Females					324(66.3)	19.65(18.92–20.38)	6.69 (0.372)
Males					165(33.7)	18.36(17.36–19.36)	6.48 (0.504)
Resilience, self-efficacy	4	5	4–20	.85	499	8.43(8.09–8.79)	3.91 (0.176)
Females					327(65.5)	8.63(8.17–9.06)	4.05 (0.224)
Males					168(34.5)	8.08(7.54–8.63)	3.60 (0.278)
Resilience, social support	4	5	4–20	.87	503	10.76(10.43–11.12)	3.92 (0.175)
Females					330(66.6)	11.06(10.63–11.49)	3.93 (0.217)
Males					173(33.4)	10.23(9.65–10.80)	3.86 (0.293)
<b>Behavioral Health</b>							
Social relationships	4	4	4–15	.65	481	10.32(10.10–10.54)	2.43 (0.111)
Females					317(65.9)	10.27(10.00–10.52)	2.33 (0.131)
Males					164(34.1)	10.44(10.04–10.84)	2.60 (0.202)
Subjective well-being (SWB)	3	7	5–21	.70	451	11.03(10.75–11.32)	3.06 (0.144)
Females					299(66.3)	11.53(11.19–11.88)	3.02 (0.175)
Males					152(33.7)	10.05(9.59–10.52)	2.91 (0.236)
Hopkins Symptom Checklist (SCL-5)	5	4	5–20	.85	508	9.45(9.14–9.75)	3.48 (0.155)
Females					334(65.7)	10.06(9.68–10.44)	3.55 (0.194)
Males					174(34.3)	8.27(7.82–8.72)	3.02 (0.229)
Loneliness	1	5	1–5		488	3.16(3.06–3.26)	1.17 (0.053)
Females					324(66.4)	3.02(2.89–3.15)	1.17 (0.065)
Males					164(33.6)	3.43(3.26–3.61)	1.12 (0.087)
Social anxiety index	6	5	6–30	.86	507	16.06(15.64–16.47)	4.75 (0.211)
Females					331(62.3)	16.70(16.20–17.21)	4.70 (0.269)
Males					176(37.7)	14.85(14.16–15.53)	4.62 (0.348)
DSM-5 performance -only specifier	1	5	1–5		513	3.81(3.70–3.93)	1.32 (0.058)
Females					336(65.5)	3.84(3.70–3.97)	1.28 (0.070)
Males					177(34.5)	3.77(3.57–3.98)	1.40 (0.105)
Trauma index	11	3	0–11	.70	475	2.43(2.25–2.62)	2.04 (0.094)
Females					311(65.5)	2.44(2.22–2.66)	1.97 (0.112)
Males					164(34.5)	2.42(2.08–2.75)	2.17 (0.170)
Posttraumatic stress disorder symptoms	5	2 (Y/N)	0–5	.65	191	2.68(2.47–2.89)	1.47 (0.107)
Females					134(70.2)	2.80(2.55–3.04)	1.44 (0.124)
Males					57(29.8)	2.39(1.99–2.79)	1.51 (0.200)
Bullying	2	4	2–8	.76	484	2.87(2.76–2.98)	1.25 (0.057)
Females					323(66.7)	2.82(2.69–2.95)	1.23 (0.068)
Males					161(33.3)	2.97(2.77–3.16)	1.29 (0.102)
Alcohol (drinking frequency)	1	5	1–5		327	3.03(2.90–3.15)	1.15 (0.064)

Table 1 (continued)

Variables	Items	Options	Min – max	Alpha	N (%)	M (95% CI)	SD (SE)
Females					218(66.7)	3.03(2.89–3.17)	1.06 (0.072)
Males					109(33.3)	3.02(2.77–3.27)	1.32 (0.126)
Alcohol (really drunk / felt intoxicated)	1	6	1–6		325	3.56(3.56–3.96)	1.83 (0.102)
Females					217(66.8)	3.76(3.52–4.01)	1.80 (0.122)
Males					108(33.2)	3.76(3.40–4.12)	1.90 (0.183)

Note 1: The Performance-only specifier index consist of 6 items. The psychometric properties are given for the item that specifically is related to the DSM-5 diagnostic criteria for this specifier

a three-point Likert scale (1 = no, 2 = yes, last year, 3 = yes, in my lifetime), with only one option possible. However, the original scale was recoded as 0 = No, 1 = Yes, last year, 1 = Yes, lifetime. A summed score for the 11 items was created (range 0–11), with higher scores indicating more traumatic events experienced.

**Posttraumatic stress disorder (PTSD) symptoms:** Five items from the 20-item child version of the UCLA PTSD reaction index, which was used to survey child exposure to community violence in the Community Violence Exposure Survey (e.g., “Do you still think very much about what happened?”, “Do you have frightening thoughts?”). Response options were No (0) or Yes (1). A summed score was made (0–5) with higher scores indicating more PTSD symptoms.

**Bullying:** “Does it happen or has it previously happened at school: you have been teased/harassed by other students?” and “Does it happen or has it previously happened at school; you are snubbed/excluded by the students for a long time?”, each rated on a four-point Likert scale (1 = never, 2 = sometimes, 3 = often, 4 = very often). A summed score was made from these items, with higher scores indicating more experiences with bullying.

**Alcohol:** Two items. “How often do you drink alcohol?” with five response options (1 = every week or more often, 2 = every other week, 3 = more seldom than every other week, but more often than once a month, 4 = once a month or more seldom than once a month, 5 = never). Higher scores indicate a higher rate of drinking alcohol. “Have you ever had so much alcohol that you were really drunk/felt intoxicated?” with six response options (1 = no/never, 2 = yes, once, 3 = yes, 2–3 times, 4 = yes, 4–10 times, 5 = yes, 11–25 times, 6 = yes, more than 25 times). Higher scores indicate more experience with being “drunk” or “feeling intoxicated”.

## Statistical Analyses

A chi-square test of independence was used to test for between-group differences in sex and sociodemographic

variables. To explore between-group differences in other parameters, general linear regression was used. The three groups were dummy coded, and the performance-only specifier group was used as the primary reference. To reduce the possibility of type 1 error from multiple comparisons (three for each outcome), a significance level of  $p < .01$  was required. To increase predictive ability and to eliminate confounding effects, sex and age were added to the model as covariates. Overall effect sizes across groups were calculated with partial eta-squared. Eta-squared was converted to Cohen’s  $d$  using the formula by Cohen et al. (2003), where 0.2, 0.5, and 0.8 represent small, medium, and large effect sizes, respectively. Effect sizes and confidence intervals are reported for each comparison.

## Ethical Approval

The Regional and National Committees for Medical and Health Research Ethics and the Norwegian Directorate of Health all approved the Young-HUNT3 study. To meet the requirements of the Regional and National Committees for Medical and Health Research Ethics (REK 2010/1020-2), interviewers were trained and supervised in the use of a case trial protocol (CTP). The CTP was used to guide interviewers when a participant expressed an interest in or need for psychological service, following the clinical interview.

## Results

### Young-HUNT3 Participation

The final sample completing the ADIS-C was 6,610 participants (age mean [M] = 15.98 years, standard deviation [SD] = 1.70), among whom 50.4% ( $N = 3,329$ ) were female and 49.6% ( $N = 3,281$ ) were male. Participants who did not complete the interview ( $N = 1,606$ ; age M = 15.51 years,  $SD = 1.85$ ) were 800 (49.8%) male and 806 (50.2%) female. An independent samples  $t$  test,  $t(7835) = 1.484$ ,  $p = .14$  of the SAD self-report index summary score did not

show any differences between participants who completed ( $M=11.46$ ,  $SD=4.30$ ) or did not complete ( $M=11.28$ ,  $SD=4.45$ ) the ADIS-C interview. No between-group differences were found based on demographics (e.g., family income  $t(7634)=0.995$ ,  $p=1.00$ ; number of close friends  $t(7739)=1.123$ ,  $p=.26$ ) or clinical data (e.g., SCL-5  $t(7909)=0.398$ ,  $p=.69$ ; Rosenberg Self-Esteem  $t(7712)=1.402$ ,  $p=.16$ ; insomnia  $t(7796)=1.775$ ,  $p=.08$ ; READ ( $[7551]=0.616$ ,  $p=.54$ ). For a description of the various instruments, see Ranøyen et al. (2013) and the variable list available from the HUNT research center website: <https://hunt-db.medisin.ntnu.no/hunt-db/variablelist>.

### Three Study Groups

The flow chart (Fig. 1) shows participant allocation to the three conditions.

Nineteen participants overlapped two groups (11 were assigned to groups 1 and 3; 8 to groups 2 and 3); these 19 were removed from the data set, resulting in a final sample of 526 participants (age  $M=16.23$  years,  $SD=1.84$ ). A one-way ANOVA ( $F[2,523]=8.53$ ,  $p<.001$ ) revealed a significant age difference among the groups. Post hoc comparisons using Tukey's honestly significant difference test indicated that the full spectrum SAD group (age  $M=15.74$  years,  $SD=1.8$ ) was significantly younger than both the subclinical (age  $M=16.46$  years,  $SD=1.95$ ) and performance-only (age  $M=16.44$  years,  $SD=1.69$ ) groups. The subclinical and performance-only groups did not differ significantly.

The full spectrum group included 49 (30.8%) males, while the subclinical and performance-only groups included 64 (32.7%) and 68 (39.8%) males, respectively; there was no significant sex difference among the three groups ( $\chi^2[2]=3.35$ ,  $p=.19$ ).

### Sociodemographics

A chi-square test of independence was performed to examine the relations between group affiliation and sociodemographic variables. There were no significant relations among groups and family economy/income ( $\chi^2[4, N=488]=2.517$ ,  $p=.284$ ), parents separated/divorced ( $\chi^2[4, N=489]=8.741$ ,  $p=.068$ ), or part of teams and clubs ( $\chi^2[4, N=498]=3.399$ ,  $p=.493$ ).

### General Health

There were no significant differences among the three groups with respect to perceptions of their sleep difficulties, pain experiences, or physical disability. In contrast, participants in both the full spectrum and subclinical groups endorsed significantly lower self-esteem ( $d=0.54/0.52$ , respectively),

lower resilience in general ( $d=0.45/0.49$ , respectively), and experienced less social support ( $d=0.67/0.57$ , respectively), compared with those in the performance-only specifier group. The same analyses were then run with sex and age as covariates on the same scales that significantly differentiated the performance-only specifier group from the other two SAD groups. The same patterns emerged for self-esteem, resilience in general, and social support. However, for self-esteem a statistically significant effect was found for sex  $t(483)=-6.84$ ,  $p<.001$  but not for age  $t(483)=-0.16$ ,  $p=.87$ . For resilience in general and social support, the analyses did not show significant results neither for either sex  $t(489)=-1.64$ ,  $p=.10$  and  $t(503)=-1.77$ ,  $p=.08$  or age  $t(489)=1.16$ ,  $p=.25$  and  $t(503)=1.46$ ,  $p=.14$ .

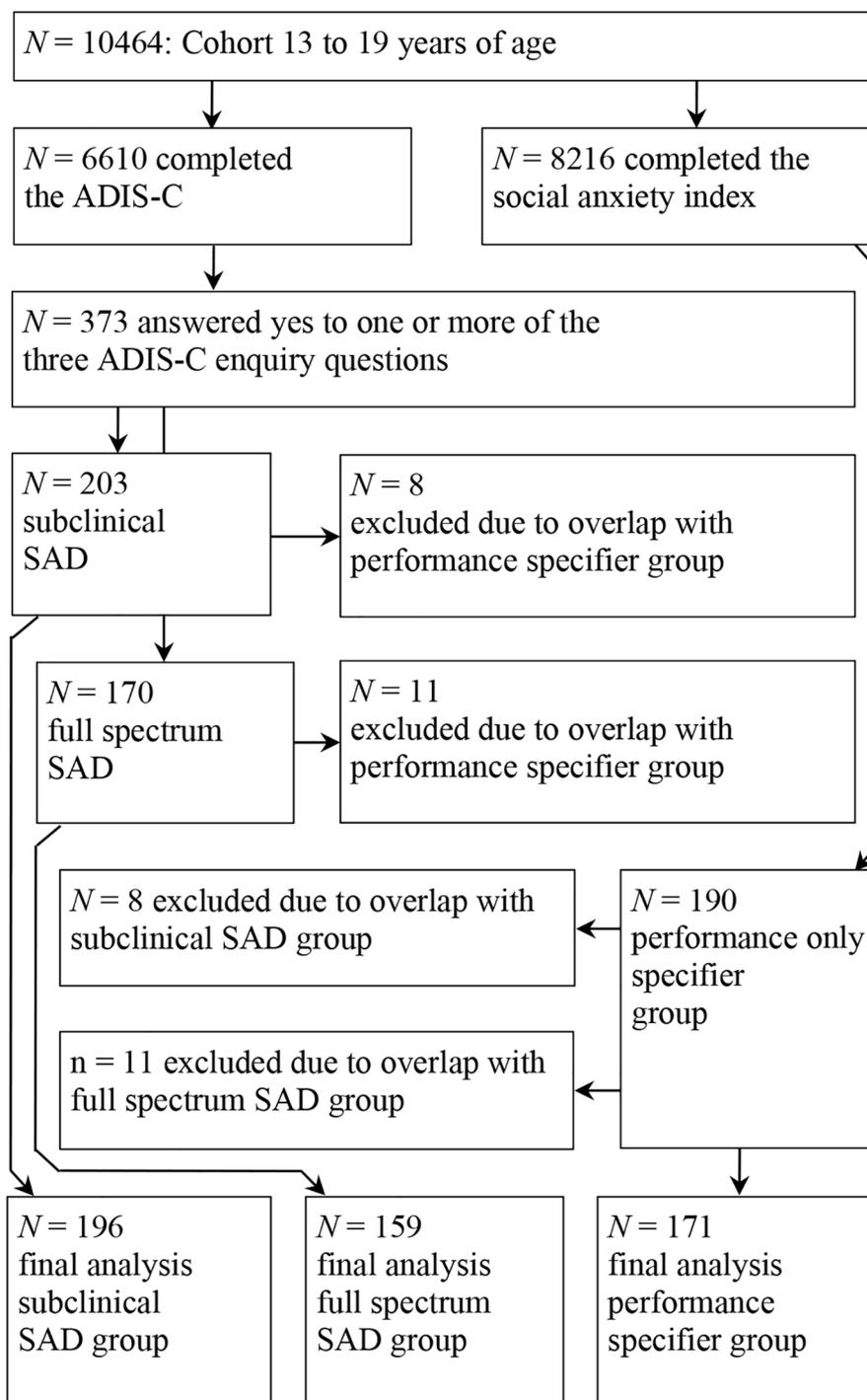
### Behavioral Health

The performance-only specifier group reported significantly stronger social relationships ( $d=0.49/0.67$ ), better general psychological well-being ( $d=0.49/0.37$ ), fewer mood symptoms ( $d=0.62/0.50$ ), less loneliness ( $d=0.59/0.53$ ), and less experience of bullying ( $d=0.59/0.53$ ) compared with both the full spectrum and subclinical groups, respectively. In contrast, there were no significant differences between the subclinical and full spectrum groups on these four measures. No significant differences were found among the three groups on trauma or PTSD indexes. Using sex and age as covariates did not significantly influence the results across groups. For the scales assessing SWB and the experience of loneliness, a significant effect was found for sex  $t(451)=-4.60$ ,  $p<.001$  and  $t(488)=3.33$ ,  $p<.001$ , but not for age  $t(451)=1.63$ ,  $p=.11$  and  $t(488)=-2.53$ ,  $p=.01$ . For mood symptoms (SCL-5), a significant effect was found for sex  $t(508)=-5.28$ ,  $p<.001$  and age  $t(508)=3.73$ ,  $p<.001$ , while for bullying and social relationships nonsignificant effects were found for both age  $t(484)=-1.66$ ,  $p=.01$  and  $t(481)=0.123$ ,  $p=.90$ , respectively, and sex  $t(484)=-1.58$ ,  $p=.11$  and  $t(481)=0.38$ ,  $p=.71$ , respectively.

For the social anxiety index, significant differences were found among the three groups. The full spectrum group had significantly higher SAD symptom levels compared with the subclinical group ( $d=0.30$ ) and the performance-only group ( $d=0.77$ ). Further, the subclinical group showed significantly higher SAD symptom levels compared with the performance-only group ( $d=0.42$ ). Using sex and age as covariates did not significantly influence the results. Significant effects were shown for both sex  $t(507)=-3.81$ ,  $p<.001$  and age  $t(507)=4.29$ ,  $p<.001$ .

On performance anxiety specifically, a significant difference was found between the performance-only group and the other two groups ( $d=1.39/1.45$ , respectively), whereas the performance group reported significantly higher

**Fig. 1** The study flow chart shows how participants were distributed across the three comparison groups



performance anxiety symptoms. The subclinical group reported a significantly lower level of performance anxiety compared with the full spectrum group ( $d=0.22$ ). Applying sex and age as covariates did not have any significant effect of the main results, demonstrating a nonsignificant effect for sex  $t(517) = -2.02, p = .04$  and a significant effect for age  $t(517) = 2.69, p < .01$ .

It is interesting to note that the results revealed no significant differences among the groups with respect to the overall frequency of drinking alcohol. By contrast, the performance-only specifier group reported that they were really drunk/intoxicated significantly more often compared with the full spectrum group ( $d=0.46$ ), but not compared with the subclinical group  $t(325) = -1.38, p = .17$ . Using age and sex as covariates influenced the main results, with the

**Table 2** General health: Mean, standard deviation (SD) and group comparisons across on various parameters

Measurements	Groups			Group comparison statistics
	SAD (full-spect.) Mean (SD) n	SC-SAD (subclinical) Mean (SD) n	DSM-5 (PO) specifier Mean (SD) n	
Self Esteem (RSE)	10.08 (2.68) n= 143	9.98 (2.57) n= 179	8.57 (2.68) n= 162	F(2,481)= 16.49, $p < .001$ , $d = 0.52$ SAD > PO, $B = 1.51$ , $p < .001$ , $d = 0.54$ [0.28, 0.81] SC-SAD > PO, $B = 1.42$ , $p = .001$ , $d = 0.52$ [0.27, 0.78] SAD = S-SAD, $B = 0.10$ , $p = .75$ , $d = 0.03$ [-0.24, 0.31]
Impairment	6.19 (1.99) n= 134	5.96 (1.29) n= 161	5.82 (1.30) n= 159	F(2,454)= 2.15, $p = .12$ , $d = 0.19$ SAD = PO, $B = .37$ , $p = .04$ , $d = 0.28$ [-0.05, 0.48] SC-SAD = PO, $B = .13$ , $p = .44$ , $d = 0.10$ [-0.21, 0.42] SAD = SC-SAD, $B = .24$ , $p = .19$ , $d = 0.14$ [-0.12, 0.40]
Experience of pain	2.89 (1.72) n= 131	2.78 (1.72) n= 158	2.66 (1.67) n= 136	F(2,422)= .62, $p = .54$ , $d = 0.11$ SAD = PO, $B = .23$ , $p = .27$ , $d = 0.22$ [-0.16, 0.43] SC-SAD = PO, $B = .12$ , $p = .54$ , $d = 0.11$ [-0.33, 0.57] SAD = SC-SAD, $B = .11$ , $p = .60$ , $d = 0.11$ [-0.37, 0.58]
Insomnia	6.09 (1.57) n= 150	6.18 (1.41) n= 186	6.50 (3.09) n= 163	F(2,496)= 3.60, $p = .028$ , $d = 0.24$ SAD = PO, $B = -.41$ , $p = .012$ , $d = -0.30$ [-0.55, 0.01] SC-SAD = PO, $B = -.32$ , $p = .04$ , $d = -0.23$ [-0.50, 0.04] SAD = SC-SAD, $B = -.09$ , $p = .57$ , $d = -0.06$ [-0.32, 0.19]
Resilience (READ) Total scale	20.19 (6.45) n= 147	20.26 (6.64) n= 177	17.22 (6.39) n= 165	F(2,486)= 11.76, $p < .0001$ , $d = 0.44$ SAD > PO, $B = 2.98$ , $p < .001$ , $d = 0.45$ [0.18, 0.72] SC-SAD > PO, $B = 3.04$ , $p < .001$ , $d = 0.49$ [0.20, 0.71] SAD = SC-SAD, $B = -.63$ , $p = .93$ , $d = -0.01$ [-0.28, 0.26]
Resilience (READ) Social support	11.82 (8.82) n= 151	11.39 (3.82) n= 185	9.16 (3.63) n= 167	F(2,500)= 23.77, $p < .0001$ , $d = 0.62$ SAD > PO, $B = 2.66$ , $p < .001$ , $d = 0.67$ [0.42, 0.93] SC-SAD > PO, $B = 2.23$ , $p < .001$ , $d = 0.57$ [0.33, 0.82] SAD = SC-SAD, $B = .43$ , $p = .30$ , $d = 0.11$ [-0.15, 0.37]
Resilience (READ) Social Self-efficacy	8.38 (3.81) n= 148	8.81 (4.04) n= 186	8.07 (3.83) n= 167	F(2,492)= 1.59, $p = .20$ , $d = 0.16$ SAD = PO, $B = .33$ , $p = .46$ , $d = 0.08$ [-0.19, 0.36] SC-SAD = PO, $B = .75$ , $p = .08$ , $d = 0.19$ [-0.07, 0.44] SAD = SC-SAD, $B = -.42$ , $p = .33$ , $d = -0.11$ [-0.37, 0.16]

Note.  $B$  = Unstandardized regression coefficient,  $d$  = Cohen's  $d$ . 95% confidence intervals for Cohen's  $d$  in brackets

subclinical group reporting significantly less alcohol intoxication compared with the performance-only SAD group  $t(325) = -3.33$ ,  $p < .01$ . In contrast, the comparison between the full spectrum and performance-only SAD groups did not significantly change. A nonsignificant effect was found for sex  $t(325) = 0.27$ ,  $p = .79$ , while a significant effect was shown for age  $t(325) = 10.27$ ,  $p < .001$ .

## Discussion

These data clearly indicate that the group with performance-only specifier SAD is distinct on most clinical measures from both the full spectrum and subclinical SAD groups. In contrast, there were few differences between the subclinical and full spectrum SAD groups. The performance-only group demonstrated significantly higher self-esteem, better psychological well-being, lower levels of mood symptoms, more close relationships, and higher levels of social support compared with both the full spectrum and subclinical

groups. Furthermore, the three groups did not differ in either sociodemographic variables or how often they had experienced trauma-related life events or PTSD symptoms.

Nagata et al. (2015) reported that individuals with non-generalized SAD may have more trauma experiences in childhood compared with those with generalized SAD. Our results are inconsistent with that finding. Rather, we found no significant differences among the three groups in their reported numbers of traumatic events or PTSD symptoms. However, significantly more participants in the full spectrum group reported exposure to bullying compared with the performance-only specifier group. The destructive consequences of bullying on the development of SAD have also been reported in younger samples (Aune & Stiles, 2009b). Thus, our findings suggest a nuanced interpretation: while general traumatic experiences may not distinguish those with performance-only specifier, they may experience specific traumatic events like bullying differently.

As shown in previous studies among adults (Stein & Stein, 2008; Wittchen, et al., 1999), our results confirm that

**Table 3** Behavioral health: Mean, standard deviation (SD) and group comparisons across on various parameters

Measurements	Groups			Group comparison statistics
	SAD (full-blown) Mean (SD) n	SC-SAD (subclinical) Mean (SD) n	DSM-5 (PO) specifier Mean (SD) n	
Social relationships	9.99 (2.45) n = 145	9.45 (2.47) n = 175	11.03 (2.21) n = 161	F(2,478) = 10.70, $p < .001$ , $d = 0.30$ SAD < PO, $B = -1.05$ , $p < .001$ , $d = 0.45$ [0.22, 0.67]
General psychological well-being (SWB)	11.67 (3.30) n = 141	11.22 (2.84) n = 175	10.13 (2.89) n = 135	SC-SAD < PO, $B = -1.08$ , $p < .001$ , $d = 0.67$ [0.45, 0.89] SAD = SC-SAD, $B = 0.032$ , $p = .91$ , $d = -0.22$ [-0.44, 0.00] F(2,448) = 9.68, $p < .0001$ , $d = 0.41$ SAD > PO, $B = 1.55$ , $p < .001$ , $d = 0.49$ [0.21, 0.76] SC-SAD > PO, $B = 1.09$ , $p = .002$ , $d = 0.37$ [0.09, 0.66] SAD = SC-SAD, $B = 1.01$ , $p = .18$ , $d = 0.15$ [-0.12, 0.42]
Depression and Anxiety SCL-5	10.34 (3.74) n = 150	9.85 (3.50) n = 189	8.21 (2.83) n = 169	F(2,505) = 18.02, $p < .001$ , $d = 0.54$ SAD > PO, $B = 2.13$ , $p < .001$ , $d = 0.62$ [0.38, 0.89] SC-SAD > PO, $B = 1.64$ , $p < .001$ , $d = 0.50$ [0.24, 0.76] SAD = SC-SAD, $B = 0.49$ , $p = .18$ , $d = 0.13$ [-0.11, 0.38]
Loneliness	2.90 (1.20) n = 144	2.98 (1.15) n = 181	3.59 (1.05) n = 163	F(2,485) = 17.82, $p < .001$ , $d = 0.54$ SAD < PO, $B = -0.69$ , $p < .001$ , $d = -0.59$ [-0.85, -0.32] SC-SAD < PO, $B = -0.61$ , $p < .001$ , $d = -0.53$ [-0.79, -0.27] SAD = SC-SAD, $B = -0.09$ , $p = .49$ , $d = -0.08$ [-0.33, 0.18]
Social Anxiety index	17.80 (5.38) n = 151	16.19 (5.20) n = 185	14.38 (2.61) n = 171	F(2,504) = 22.49, $p < .0001$ , $d = 0.60$ SAD > PO, $B = 3.41$ , $p < .001$ , $d = 0.77$ [0.49, 1.03] SC-SAD > PO, $B = 1.80$ , $p < .001$ , $d = 0.42$ [0.15, 0.70] SAD > SC-SAD, $B = 1.61$ , $p < .001$ , $d = 0.30$ [0.08, 0.53]
Performance only (SAD)	3.37 (1.23) n = 152	3.10 (1.25) n = 190	5.00 (0.00) n = 171	F(2,510) = 177.52, $p < .001$ , $d = 1.67$ SAD < PO, $B = -1.63$ , $p < .001$ , $d = -1.39$ [-1.62, -1.15] SC-SAD < PO, $B = -1.90$ , $p < .001$ , $d = -1.45$ [-1.64, -1.25] SAD > SC-SAD, $B = 0.28$ , $p = .01$ , $d = 0.22$ [0.08, 0.43]
Trauma index	2.67 (2.27) n = 142	2.44 (1.87) n = 176	2.21 (1.99) n = 157	F(2,472) = 1.95, $p = .14$ , $d = 0.14$ SAD = PO, $B = 1.04$ , $p = .05$ , $d = 0.22$ [-0.05, 0.48] SC-SAD = PO, $B = 0.23$ , $p = .31$ , $d = 0.12$ [-0.16, 0.40] SAD = SC-SAD, $B = 0.23$ , $p = .30$ , $d = 0.12$ [-0.15, 0.38]
Bullying	3.22 (1.28) n = 142	2.97 (1.36) n = 180	2.46 (0.95) n = 162	F(2,481) = 15.86, $p < .001$ , $d = 0.52$ SAD > PO, $B = 0.76$ , $p < .001$ , $d = 0.64$ [0.36, 0.93] SC-SAD > PO, $B = 0.51$ , $p < .001$ , $d = 0.42$ [0.16, 0.68] SAD = SC-SAD, $B = 0.25$ , $p = .07$ , $d = 0.19$ [-0.06, 0.43]
PTSD index	2.96 (1.42) n = 62	2.59 (1.38) n = 69	2.43 (1.57) n = 60	F(2,188) = 2.47, $p = .09$ , $d = 0.32$ SAD = PO, $B = 0.57$ , $p = .03$ , $d = 0.37$ [-0.05, 0.59] SC-SAD = PO, $B = 0.17$ , $p = .53$ , $d = 0.10$ [-0.31, 0.53] SAD = SC-SAD, $B = 0.41$ , $p = .11$ , $d = 0.29$ [-0.15, 0.89]
Alcohol how often?	3.18 (1.17) n = 83	3.15 (1.04) n = 116	2.82 (1.21) n = 128	F(2,324) = 3.48, $p = .03$ , $d = 0.29$ SAD = PO, $B = 0.36$ , $p = .03$ , $d = 0.29$ [-0.02, 0.62] SC-SAD = PO, $B = 0.33$ , $p = .03$ , $d = 0.28$ [-0.03, 0.59] SAD = SC-SAD, $B = 0.34$ , $p = .84$ , $d = 0.03$ [-0.32, 0.39]
Alcohol felt intoxicated	3.22 (1.89) n = 83	3.79 (1.66) n = 115	4.10 (1.87) n = 127	F(2,322) = 6.05, $p = .003$ , $d = 0.39$ SAD < PO, $B = -0.89$ , $p = .001$ , $d = -0.46$ [-0.79, -0.14] SC-SAD = PO, $B = -0.32$ , $p = .17$ , $d = -0.18$ [-0.50, 0.14] SAD = SC-SAD, $B = -0.57$ , $p = .03$ , $d = -0.32$ [-0.67, 0.03]

Note.  $B$  = Unstandardized regression coefficient,  $d$  = Cohen's  $d$ . 95% confidence intervals for Cohen's  $d$  in brackets

adolescents with full spectrum SAD report poorer social networks and fewer romantic relationships. Kraines et al. (2019) showed that interpersonal rejection is an important factor in the development of full spectrum SAD. Experiencing loneliness has also been consistently associated with SAD (La Greca & Harrison, 2005; Oren-Yagoda, et al., 2022). The data herein allow a more detailed exploration of how the three SAD groups experience different relationship types. That the performance-only specifier

group experienced significantly more close friendships, spent more time with friends, and visited others more often demonstrates that feelings of loneliness may be more comprehensive among those with full spectrum or subclinical SAD. The results also demonstrate that these experiences are closely connected to behavior patterns, which should be therapeutically recognized and addressed. However, our data cannot determine the extent to which rejection or other

mechanisms cause these differences among the three SAD conditions.

With respect to resilience, those in the performance-only specifier group reported more psychological strengths compared with the other groups. However, the significant difference was in social support, not the social self-efficacy factor. Aune et al. (2021) have shown how social support predicts, buffers, and attenuates the effects of negative life events on SAD symptoms. This group also demonstrated that increases in both social support plus social self-efficacy are associated with reduced SAD symptoms, over and above the variance explained by social support alone. We found that the three conditions did not differ on the self-efficacy scale, which includes specific social self-efficacy skills. Beidel et al. (2010) showed that adults diagnosed with generalized versus nongeneralized social phobia reported equal distress and displayed similar rates of avoidance during speech tasks. By contrast, when interacting with others, those with generalized social phobia differed both clinically and statistically from those without these disorders. Furthermore, among adolescents (Fuentes-Rodriguez, et al., 2018), those with the performance-only specifier were differentiated from healthy controls on only the cognitive aspects of SAD (i.e., they did not differ in behavioral aspects). Our results and those from Beidel et al. (2010) and Fuentes-Rodriguez et al. (2018) are both interesting and suggestive. The generally enhanced experience of social support among the performance-only specifier group may shield them from developing full spectrum SAD. However, lack of social self-efficacy, specifically restricted to speaking and performing in public (APA, 2013, pp. 203), makes them vulnerable to developing nonfunctional performance fear. That those with exaggerated performance-only anxiety are older also indicates that this fear may bloom with the expectation that they make individual presentations in front of others, and when social support from parents or guardians is expected to wane. Significantly higher reported self-esteem and general psychological well-being and lower levels of depression and anxiety symptoms indicate that the performance-only specifier group differs markedly in their psychological makeup compared with those with full spectrum SAD. The extent to which these differences are related to experiences of enhanced social support should be further explored.

It may seem counterintuitive that no significant impairment differences were found among the three SAD groups. However, these findings are less surprising when we consider the type of impairment assessed herein. The DSM-5 (APA, 2013) criteria require both marked fear or anxiety in one or more social situations and that the fear, anxiety, or avoidance cause clinically significant distress or impairment in social, occupational, or other important functional

contexts. Thus, functional impairment or general psychological well-being is related to both general health (Rapaport, et al., 2005) and SAD (Wong, Sarver, & Beidel, 2012). Magee et al. (1996) showed that around 50% of adults with SAD report at least one significant functional limitation at some point in their lives (e.g., professional help-seeking, use of medication, or role impairment). Despite this, in most studies, impairment has been related to occupational attainment and income, marital discord, restricted social and romantic relationships (Katzelnick, et al., 2003; Keller, 2003; Kessler, 2003), or quality of life. By contrast, our impairment index reflects experienced motor, vision, physical, and mental health impairments. First, our findings are inconsistent with the report by Fuentes-Rodriguez et al. (2018), suggesting that the performance-only specifier group differs from normal controls on only the cognitive aspects of SAD. Second, our results indicate that the performance-only specifier group reports equal amounts of impairment compared with the subclinical and full spectrum SAD groups. Third, this also indicates that the performance-only specifier group fulfills the requirement for a SAD diagnosis according to the DSM-5 (APA, 2013), as the impairments likely cause functional limitations. A possible interpretation of these findings is that the discrepancies between the performance-only specifier group and the full spectrum and subclinical SAD groups are related to psychological factors and family context, rather than physiological impairment, pain, or sleep problems.

Another interesting finding is the lack of significant differences on most measures between the full spectrum and subclinical groups. There were no significant differences in sociodemographic, friendship, or general health variables. The exception was the social anxiety index, on which the full spectrum SAD group reported significantly higher social anxiety symptoms compared with the subclinical SAD group. The full spectrum SAD group also reported significantly more performance anxiety compared with the subclinical group. These results may be interpreted in several ways. First, the ADIS-C (Silverman & Albano, 1996) distinguishes between those with full spectrum and those with subclinical SAD using a self-report social anxiety reference index. Second, the results provide strong evidence of a link between subclinical SAD and reduced general psychosocial health, strengthening the notion that subclinical levels of social anxiety predict both development and maintenance of SAD (Aune & Stiles, 2009b) and mental health problems more generally (Angold, et al., 1999). Moreover, Merikangas et al. (2002) demonstrated that some individuals oscillate between subclinical and full spectrum SAD. The results herein and those from previous studies (Angold, et al., 1999; Aune & Stiles, 2009a; Merikangas, et al., 2002) demonstrate the importance of offering therapeutic or

preventative treatment to adolescents showing subclinical SAD levels.

Though the current study used a well-recognized clinical interview to examine a relatively large population-based adolescent sample, there are some limitations to address. The performance-only specifier group was determined based solely on self-report. Using a clinical interview to address the specificity of the performance-only specifier might have the validity. Moreover, a clinical designation may have demonstrated, with even stronger effects, that performance fear is indisputably impairing. The psychometric properties for some of the scales used herein have not previously been reported.

The data from this study indicate that the performance-only specifier, generated in the DSM-5 (APA, 2013), may be valid among adolescents. Children and adolescents with this specific type of SAD may have other needs compared with those with clinical and subclinical SAD symptoms. Thus, schools and clinicians, as well as policymakers, should not disregard adolescents who show subclinical SAD levels, or those with or without specific performance-related challenges. Although these data provide support for a unique performance-only specifier, the sense of pervasiveness and reduction in general health functioning are dissimilar to those who experience either subclinical levels of SAD or full spectrum SAD. We must now determine whether these results are specific to the performance-only specifier, supporting the need for study replication to investigate other specific phobias and their relations to the parameters explored herein. Another important priority for future studies is determining the extent to which those suffering from the performance-only specifier differ in their responses to treatment approaches compared with individuals with full spectrum SAD.

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## Declarations

**Competing Interests** None of the authors report any conflicts of interest.

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