

# Gender Differences in Social Anxiety Symptoms: A Novel Use of Two Self-Report Measures in a Finnish Sample

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## Abstract

**Background:** Social anxiety disorder (SAD) is characterized by a fear of humiliation and/or embarrassment in social situations, which may lead to significant avoidance and distress. A preponderance of research suggests that the prevalence of SAD is higher in females than in males and that gender differences of SAD varies cross-culturally. According to numerous studies, attention to the diagnosis and adequate assessment of anxiety disorders in primary care settings is lacking. A deficiency of easily administered well-validated diagnostic tools and limited time for thorough (i.e., structured clinical interview) evaluation may contribute to the above finding.

**Procedure:** Our principal aims were two-fold: 1) to focus on emergent gender differences in self-reported social anxiety (SA) symptoms, and 2) to evaluate newly translated Finnish versions of the Social Phobia and Anxiety Inventory (SPAI) and Brief Fear of Negative Evaluation Scale -Straightforward Items (BFNE-S) in a general Finnish parent sample (N = 597).

**Results and Conclusions:** Results from our sample using the SPAI estimated that 6.7% of females and 5.0% of males met criteria for a probable diagnosis of SAD. Non socially-anxious females scored significantly higher than did their male counterparts on social interaction and focus of attention fears, whereas socially-anxious males scored higher than socially-anxious females on behavioural avoidance. The SPAI and BFNE-S are useful additions to Finnish screening tools to detect SA symptoms in adults.

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**Categories:** Psychiatry, Psychology

**Keywords:** social phobia and anxiety inventory (spai), brief fear of negative evaluation scale - straightforward items (bfne -s), adults, gender, social anxiety disorder, prevalence

## Introduction

### List of Abbreviations

AG	Agoraphobia
ANOVA	Analysis of Variance ANCOVA Analysis of Covariance
BFNE	Brief Fear of Negative Evaluation Scale

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BFNE-S      Brief Fear of Negative Evaluation Scale -Straightforward Items MANCOVA  
Multivariate Analysis of Covariance

SA            Social Anxiety

SAD          Social Anxiety Disorder

SP            Social Phobia

SPAI        Social Phobia and Anxiety Inventory

SPIN        Social Phobia Inventory

Social anxiety disorder (SAD) is characterized with a fear of humiliation and/or embarrassment in social situations, which may lead to significant avoidance of and distress [1-2]. SAD is a chronic condition with an average duration of 20 years. The onset of SAD can be before the age of 10 with a typical age at onset during the mid to late teenage years; evidence suggests that males have an earlier age at onset than females [3-5]. The 12-month prevalence for SAD varies between cultures and nations, and seems to be higher in North and South America (e.g., Brazil, Chile, and USA) than in East Asian countries, such as China, Japan, Korea, or Taiwan (6.4-9.1% vs. 0.2-0.8%) [6]. In Europe, the 12-month prevalence rate for SAD is estimated below 1% [7]. The majority of SAD clinical studies of SAD indicate an over-presentation of male patients, particularly those with an early onset of SAD, high education levels, and high comorbidity rates [6, 8]. In contrast, epidemiological studies reveal a strong trend in studies of community samples that women are significantly more likely to report SAD symptoms than are men. For example, in a recent epidemiological study by Xu and colleagues, the lifetime SAD prevalence in the USA for females was 5.7% and for males 4.2% [9]. These results indicate a gender discrepancy of a larger number of females who may experience social anxiety symptoms (and do not seek help) versus a larger clinical sample of males who are represented as clinical patients. Hence, empirically validated screening tools for SAD should be made available in a primary care setting to facilitate the apparent disconnect between gender, social anxiety (SA) symptoms, and clinical intervention. Furthermore, SA symptoms may vary (e.g., intensity of fear) between genders, and these differences should also be taken into account when screening for and treating SAD [9-10].

There is a growing body of research suggesting the efficacy of psychotherapeutic and pharmacological interventions in the treatment of SAD [11-12]. Despite encouraging evidence, SAD remains an often-times under-recognized and under-reported disorder, with studies indicating less than five percent of individuals with symptoms of social phobia (SP) currently seeking treatment [13-14]. Moreover, studies have shown that individuals with anxiety disorders seek medical attention more often than those without anxiety disorder; however, these patients tend to attribute their symptoms to physical causes (e.g., headaches, feeling tired, lightheaded, or sick to stomach) [15]. In general, research suggests that the diagnosis of anxiety disorders in primary care is lacking [16-18]. A shortage of easily administered well-validated diagnostic tools and limited time for thorough evaluation may contribute to the above finding.

In Finland, there is a paucity of self-report measures to evaluate SAD in adults. Ranta and colleagues [19] studied the validity of the 17-item Finnish version of the Social Phobia Inventory (SPIN) in a sample of 752 non-clinical adolescents ( $M = 14.6$  years) and found it to have good psychometric properties for screening and identifying adolescents with SAD. This study used higher cut-off scores (i.e., 24 vs. 19) than did the original study [20] to differentiate participants with and without SAD. Recently, Ranta and colleagues [21] have also examined the

three item Mini-SPIN in Finnish adolescent population: The Finnish Mini-SPIN also demonstrated good psychometric properties differentiating adolescents with SAD from those without using the same cut-off scores as the original Mini-SPIN study conducted in the UK. In addition to the SPIN and Mini-SPIN, it is of great clinical utility and research import to utilize more internationally established social anxiety questionnaires as tools in the Finnish diagnostic arsenal for adult psychiatry and primary care.

One of the most well-established and empirically sound screening instruments for examining SAD in adults is the 45-item Social Phobia and Anxiety Inventory (SPAI) [22], which includes two scales derived directly from the DSM criteria for: 1) SAD and 2) panic disorder. The SPAI has been translated into many languages (e.g., Icelandic, Canadian French, Dutch, Portuguese, Spanish, and Swedish), and its psychometric properties are excellent [22-31]. Another screening instrument, specifically developed to assess an individual's perceived fear of negative evaluation, is a shorter, 12-item Brief Fear of Negative Evaluation Scale (BFNE) [32]. The BFNE also has been translated into many languages (e.g., Chinese, Farsi, Japanese, German, Greek, Spanish, and Turkish) and has demonstrated strong psychometric properties. The eight-item straightforward coded subscale of the BFNE (BFNE-S) has shown better reliability and validity than the four-item reverse coded subscale [33-45].

The aim of this study was to evaluate gender differences of SA symptoms in a general Finnish parent sample using the newly translated Finnish versions of the SPAI and BFNE-S.

## Materials And Methods

### Procedure

The current data were collected in 2006 as a part of larger study regarding SA in a Finnish sample of community children (age range: 7.3- 16.5 years) [46]. Participants were randomly recruited via all mainstream schools in the city of Oulu, Finland; pupils were asked to bring the study materials (letter of consent, SPAI, and BFNE-S) home to their parents. After consenting to participation, parents completed the SPAI and BFNE-S questionnaires and returned all study forms in a sealed envelope to the school with their child. This study was approved by the Ethics Committee of the Northern Ostrobothnia Hospital District.

### Participants

Six hundred and twenty-one adults consented to participate in the study. In 24 cases, there was more missing data in the SPAI questionnaire than allowed for based on the SPAI manual [22] or more than one missing item in BFNE-S. Thus, the final sample consisted of 597 participants (368 females, 229 males). Demographic information is reported in Figure 1.

Variable	Males (N = 229)	Females (N = 368)
<i>M</i> age in years ( <i>SD</i> , range)*†	44.8 (5.5, 30.5-64.0)	41.7 (5.6, 26.3-59.0)
Education		
Lower secondary	9.3%	8.6%
Upper secondary	40.9%	47.9%
Tertiary	24.3%	26.7%
Marital status*†		
Married/Common law	93.3%	73%
Single/Divorced	6.7% <sup>a</sup>	27%

\*†*p* < .001, two-tailed. <sup>a</sup>0.8% of men were widows

**FIGURE 1: Demographic Information**

\* $<.001$ , two-tailed. a0.8% of men were widows

**Measures**

The SPAI: The SPAI [22] consists of 45 primary items rated on a seven-point Likert-type scale (0 = Never to 6 = Always). The SPAI can be divided into 1) the Difference score [i.e., social phobia (SP) score, minus the Agoraphobia (AG) score, 32 items] and 2) the AG score (13 items). In this study, we focused on the Difference score; scores range from 0 to 192. The original cut-off score for Probable SP, according to US samples reported in the SPAI manual, equals any Difference score greater than or equal to 80. According to the SPAI manual, there are also different cut-off scores indicating the likelihood of SP: Unlikely SP (Difference score  $< 34$ ), Possible mild SP (Difference score = 34-59), and Possible SP (Difference score = 60-79) [22]. The SPAI has five subscales: 1) Social Interaction (11 items), 2) Somatic and Cognitive (7 items), 3) Group Interaction (7 items), 4) Avoidance (8 items), and 5) Focus of Attention (5 items).

We were interested in gender differences in the frequency and severity of SA symptoms according to certain target social situations, as an individual's symptoms may be triggered in a variety of settings or situations. For example, significant social anxiety may emerge only when an individual is around strangers, authority figures, opposite sex, or people in general. The original SPAI subscales sums the presence of SA symptoms, including all four possible situations listed above, without differentiating them. In order to best examine these differences, we formed separate sum scores of 17 SPAI items, which consisted of four possible social situations (e.g., "I feel anxious when in a small gathering with; I feel anxious when speaking in front of: 1) strangers, 2) authority figures, 3) opposite sex, or 4) people in general." We named these four new subscales: Strangers; Authority; Opposite sex; and Generalized SA, which were rated identically to the other subscales based on the SPAI manual.

In the current study, the SPAI was translated from English into Finnish by two clinical psychologists and back-translated into English by an official translator; English versions were compared by a native English-speaking clinical psychologist. Additional back-translation for the SPAI was conducted by an official translator of Multi-Health System, Inc. Internal consistency for our sample was measured via Cronbach's Alpha: Internal consistency was excellent for the SPAI difference score ( $\alpha = .99$ ) as well as its five subscales ( $\alpha = .94$  to  $\alpha = .98$ ). For the newly formed SPAI subscales (i.e., Strangers, Authority, Opposite sex, and People in general), internal consistency was also excellent ( $\alpha = .95$  to  $\alpha = .96$ ).

The BFNE-S: The BFNE-S is an eight item scale to evaluate symptoms of anxiety-related perceived negative evaluation (e.g., "I am afraid others will not approve of me;" "I often worry that I will say or do the wrong things.") [32]. Items are rated on a five-point Likert type scale (1 = Not at all to 5 = Extremely); BFNE-S scores range from 8 to 40. In our study sample, the internal consistency was good for the BFNE-S ( $\alpha = .88$ ).

**Statistical methods**

All statistical analyses were performed using the SPSS 19.0 Statistical Software Program for the Macintosh. We completed heuristic analyses to consider appropriate covariates (e.g., education, marital status, and age). We employed parametric tests, such as analysis of variance (ANOVA), analysis of covariance (ANCOVA), and multivariate analysis of covariance (MANCOVA). Internal consistency was tested using Cronbach's Alpha ( $\alpha$ ). Effect size was evaluated using the

Eta-squared ( $\eta_p^2$ ) statistic: According to Cohen [47],  $\eta_p^2 = 0.01$  is considered a small effect,  $\eta_p^2 = 0.06$  a medium effect, and  $\eta_p^2 = 0.14$  a large effect. All tests of statistical significance are reported as two-tailed.

## Results

### Heuristic analyses

There were no statistically significant gender differences on education level:  $t(493) = 0.3$ ,  $p = \text{ns}$  (see Figure 2). In our sample, there were statistically significantly more single/divorced females (living with their children) than males (living with their children) ( $\chi^2 = 29.3$ ,  $df = 1$ ,  $p < .001$ ). There were no significant differences between single/divorced males and single/divorced females on any employed measures. Of note, married/common-law married females scored higher than their male counterparts on the SPAI Difference score, as well as the SPAI subscales of Social interaction, Somatic, and Cognitive, Focus of attention, Strangers, Authority, and Opposite sex. There were no statistically significant differences among females between marital status groups on any outcome measures; however, married/common law married males scored significantly higher than single/divorced males on the SPAI subscale of Avoidance:  $t(493) = 2.4$ ,  $p < .05$ . Thus, we added marital status as a covariate to all further analyses involving the SPAI. Marital status was not related to BFNE-S scores.

Males in our sample were also older than females:  $t(384) = 3.46$ ,  $p < .001$ . Due to a data collection error, however, we did not collect the age of all males, which prevented us from adding age to the statistical models. Of note, males with missing age data ( $n = 185$ ) did not differ significantly from control males where age was collected ( $n = 44$ ) on any variables of interest. We examined age by splitting participants into two age groups within gender by median age. There were no statistically significant differences between younger participants compared to older participants within or between gender groups on any outcome variables.

### Association between SPAI and BFNE-S

We conducted partial correlations, controlling for marital status to examine the association between SPAI and BFNE-S. There were strong relationships between the SPAI Difference score and the BFNE-S ( $r = .46$ ,  $p < .01$ ) and between SPAI subscales and BFNE-S ( $r$  range .30 to .48;  $p < .001$ , for all).

### Descriptive characteristics of the SPAI and BFNE-S by gender

We used ANCOVA, controlling for marital status, to study gender differences on SPAI Difference scores, females scored statistically significantly higher than did males (See Table 1). In order to examine the mean scores of the SPAI subscales, we conducted MANCOVA with gender as the fixed factor and SPAI scores as the outcome variable, controlling for marital status. The main effect of gender was significant ( $F(9, 453) = 9.5$ , Wilks'  $\Lambda = .88$ ,  $\eta_p^2 = .11$ ,  $p < .001$ ) with females scoring higher than males on all SPAI subscales, with the exception of Avoidance.

Further, results of an ANOVA examining gender differences on the BFNE-S indicated that females scored higher than males. Findings regarding SPAI and BFNE-S mean scores between genders are reported in Table 1.

	Females	Males	F(df = 1)	F(df = 1) $\eta_p^2$
SPAI	M(std.E)	M(std.E)		
Difference score	36.4 (1.6)	29.6 (2.3)	7.4**	.02
Social interaction	57.7 (3.0)	44.3 (3.0)	11.5*†	.02
Somatic and cognitive	24.1 (1.2)	19.0 (1.5)	6.5**	.01
Group interaction	17.9 (0.9)	14.9 (1.1)	4.6*	.01
Avoidance	6.0 (0.5)	6.8 (0.6)	1.0	.00
Focus of attention	14.1 (0.6)	10.7 (0.7)	12.7*†	.03
Strangers	19.3 (0.8)	15.5 (1.1)	7.2**	.02
Authority	22.5 (1.0)	17.0 (1.2)	12.5*†	.03
Opposite sex	18.5 (0.8)	14.8 (1.1)	7.1**	.02
People in general	17.4 (0.8)	14.6 (1.0)	4.5*	.01
BFNE-S	12.6 (4.7)	11.7 (3.9)	5.7*	.01

**TABLE 1: Means of the SPAI Subscale (controlling for Marital Status) and BFNE-S scores**

\*p < .05, \*\*p < .01, \*†p < .001, two-tailed.

### The SPAI cut-off score distribution

6.7% of females (n = 23) and 5.0% of males (n = 11) scored on or above the Probable SP cut-off score defined by the SPAI. The distribution of the SPAI Difference score is presented in Table 2.

SPAI SP Likelihood	Females %, M Score (sd)	Males %, M Score (sd)	$\chi^2$ (df = 1)
Probable SP (score? 80)	6.7, 95.3(15.8)	5.0, 95.8(25.0)	8.2**
Possible SP (score 60-79)	10.2, 69.1(5.9)	5.9, 69.5(6.3)	64.7*†
Possible Mild SP (score 34-59)	30.2, 45.2(7.8)	24.4, 45.4(6.6)	3.3
Unlikely SP (score < 34)	52.8, 16.2(10.2)	64.7, 14.3(10.6)	.7

**TABLE 2: The SPAI Difference Score Distribution.**

\*\*p < .01, \*†p < .001, two-tailed.

### SPAI subscale scores in each SPAI SP likelihood groups by gender

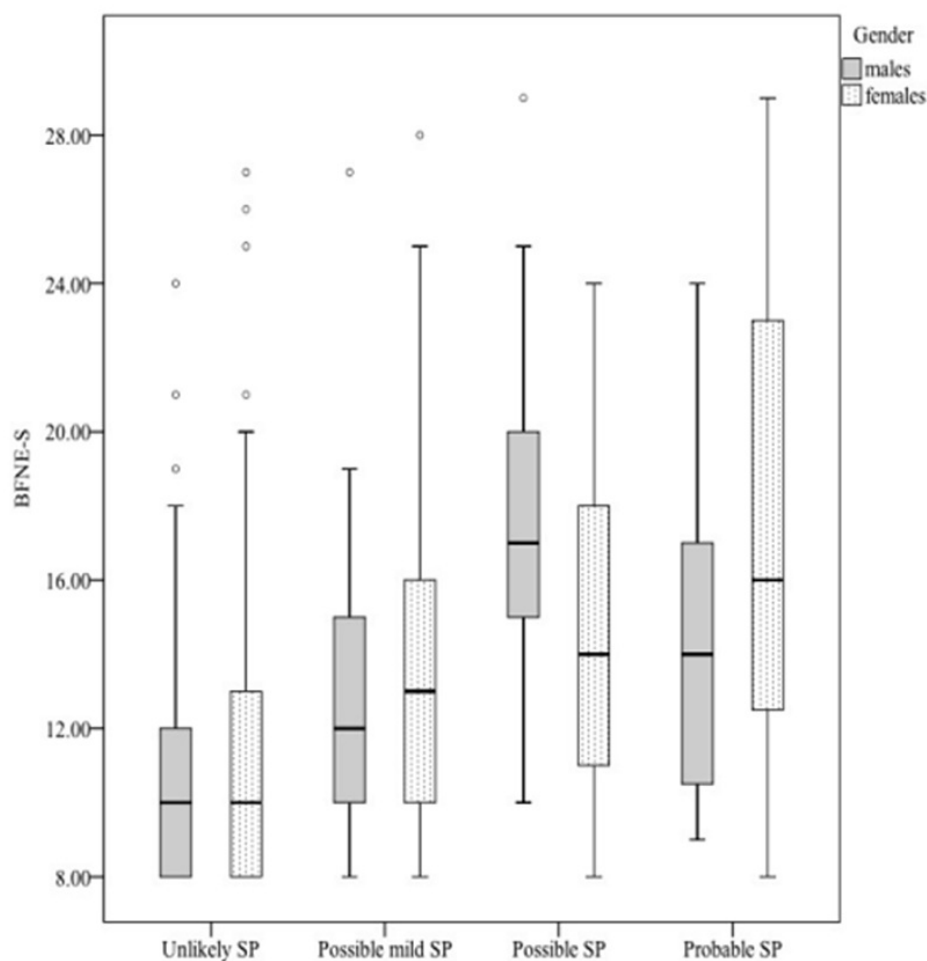
We examined whether SA symptoms vary between genders in different SPAI SP likelihood groups. We, therefore, conducted separate MANCOVAs (SPAI subscales x gender, controlling for marital status) for each SP likelihood groups (i.e., Probable SP, Possible SP, Possible mild SP, Unlikely SP). In the Unlikely SP group, there was a main effect of gender (Wilks'  $\Lambda$  = .83,  $F(9, 253) = 5.7$ ,  $\eta_p^2 = .12$ ,  $p < .001$ ; females scored statistically significantly higher than males on the SPAI subscales-- Social interaction, Focus of attention, and Authority ( $F(1) = 6.9$ ,  $\eta_p^2 = .03$ ,  $p < .01$ ;  $F(1) = 8.7$ ,  $\eta_p^2 = .03$ ,  $p < .01$ ;  $F(1) = 6.8$ ,  $\eta_p^2 = .03$ ,  $p < .01$ ). Males, however, scored higher than females on the SPAI subscale of Avoidance ( $F(1) = 12.3$ ,  $\eta_p^2 = .05$ ,  $p < .001$ ).

There were no significant gender effects for Possible Mild, Possible, or Probable SP (Wilks'  $\Lambda$  = .92,  $F(5) = 2.2$ ,  $\eta_p^2 = .08$ ,  $p = .055$ ; Wilks'  $\Lambda$  = .95,  $F(5) = .03$ ,  $\eta_p^2 = .05$ ,  $p = \text{ns}$ ; Wilks'  $\Lambda$  = .70,  $F(5) = 1.6$ ,  $\eta_p^2 = .31$ ,  $p = \text{ns}$ ). Between-subjects tests, however, revealed a gender difference on the SPAI subscale of Avoidance; again, males scored significantly higher than females on groups of Possible Mild and Probable SP ( $F(1) = 5.2$ ,  $\eta_p^2 = .04$ ,  $p < .05$ ;  $F(1) = 5.2$ ,  $\eta_p^2 = .19$ ,  $p < .05$ ).

### BFNE-S scores in each SPAI SP likelihood groups by gender

We conducted ANOVA to study the BFNE-S score distribution between SPAI SP likelihood groups (fixed factors: gender, SP likelihood group). As expected, there was a significant main effect of SP likelihood group, with an increased BFNE-S score associated with an increased probability of having SP (based on the SPAI) ( $F(555) = 39.9$ ,  $p < .001$ ,  $\eta_p^2 = .18$ ) (Figure 2). The main effect of gender was non-significant. A significant interaction between gender and SP likelihood groups emerged:  $F(555) = 3.1$ ,  $\eta_p^2 = .02$ ,  $p < .05$ . Males scored higher than females in the Possible SP group, whereas females scored higher than males in all other categories.





**FIGURE 2: The BFNE-S Score Distribution Between SPAI Likelihood Groups by Gender**

## Discussion

The aim of our study was to examine gender differences in SA symptoms with the newly-translated Finnish versions of the SPAI and BFNE-S in an adult Finnish sample.

In sum, our analyses yielded the following results: 1) females scored statistically significantly higher than males on all SPAI and BFNE-S scales, with exception of the SPAI avoidance subscale; 2) non-socially-anxious females (based on SPAI SP likelihood groups) scored significantly higher than their male counterparts on fear of social interaction, focus of attention, and social anxiety in the presence of authority figures. However, non-socially-anxious as well as socially-anxious males scored significantly higher than their female counterparts on SA symptoms of behavioural avoidance; 3) the self-reported severity of overall SA symptoms and other SA subtype symptoms, with exception of behavioural avoidance, were similar in socially-anxious males and socially-anxious females; 4) the prevalence of probable SP in our study was 6.7% for females and 5.0% for males; 5) data revealed that the Finnish SPAI has excellent internal consistency, indicating that the original factor structure of the SPAI is consistent in the Finnish version; 6) the Finnish BFNE-S also demonstrated good internal consistency, and therefore, may also be considered a novel and useful addition to the Finnish



arsenal to measure social anxiety symptoms.

Our results are consistent with the findings of previous studies and iterate the need to focus on different subtypes of SA symptoms between genders [22-24, 30]. Consistent with studies conducted in Spain [48] and the USA [35], we detected a statistically significant gender difference for the fear of negative evaluation; however, these results were contrary to findings by Koydemir and Demir in Turkey [37, 49]. Our findings are similar to previous research suggesting that behavioural avoidance may be a more common SA symptom in males than in females [29, 50]. Interestingly, despite an increase in behavioral avoidance for males, as noted earlier, males are more likely, in general, to seek clinical intervention for their SA symptoms.

In our sample, married/common-law married females scored statistically significantly higher than their male counterparts on the SPAI overall, somatic and cognitive SA symptoms, symptoms emerging in social interactions, SA concerns with being the focus of attention, and SA symptoms presenting during interactions with strangers, authority figures, and members of the opposite sex. Married/common-law married males scored also significantly higher than single/divorced males on behavioural avoidance symptoms of SA. Marital status was unrelated to the fear of negative evaluation. Our findings suggest that marital status effects experienced SA symptoms, especially in Finnish females. We did not measure marital satisfaction in our study; thus, we are unable to determine whether distress in the marriage was associated with an increase in experienced SA symptoms. In a recent study by Cairney and colleagues (2007), the authors found no significant relationships between SAD and gender or marital status in older Canadian adults (over 55 years of old, N = 12,792) [51].

In our sample, Finnish adults scored lower, in general, than participants from most other international studies conducted with the SPAI or BFNE-S (Tables 3, 4). These differences may be in part explained by age variance, for example, participants in our study tended to be older than most of the samples collected in previous studies. Many previous study results were based on data from undergraduate students. The BFNE-S mean in our sample (Table 4) was most comparable with the community sample studied by Weeks and colleagues [43], which also included adults (M age 33.1). Fear of negative evaluation may decrease with age in a Finnish general population. Most importantly, however, these differences imply the role of culture in the report of social anxiety symptoms, as the actual SAD prevalence rates reported by other European countries is similar, but considerably lower than rates reported in the USA [7, 9].

Study Origin	Participants	N	M Age	SPAI Difference Score M Males	Females	All
Finland*	General community sample	597	42.1	29.6	36.4	33.2
	Adults with Probable SP	34	40.5	95.8	95.3	95.5
Netherlands [27]	Community adults	65	31.4	73.3a	76.7a	41.39
	SAD patients	92	32.5	73.3a	76.7a	99.10
USA [22]	College students without SAD	124	n/a	n/a	n/a	32.7
	College students with SAD	58	n/a	n/a	n/a	72.2
Spain [23]	Nonclinical sample	198	34.2	41.6	46.6	44.9
	SAD patients	72	27.0	102.5	99.9	100.8
Brazil [24]	University students	213	23.0	48.5	50.5	49.6
Australia [25]	SAD patients	73	31.3	n/a	n/a	110.6
Canada [28]	SAD patients	25	33.8	n/a	n/a	100.5
USA [30]	Community adults with SAD	61	35.3	n/a	n/a	103.3
USA [52]	GSP patients	20	30.4	n/a	n/a	96.5

**TABLE 3: The SPAI Difference Score Distribution**

\*Current study, n/a = information not available, a = Community and clinical patient samples combined while males and females scores were reported separately, GSP = generalized social phobia without avoidant personality disorder.

Study Origin	Participants	Study N	M age	BFNE-S M score
Finland*	General community sample	597	42.1	12.3
	Adults with Probable SP	34	40.5	16.4
Canada [33]	SAD patients	121	n/a	27.0
Spain [48]	Student sample	527	21.7	21.4
	SAD patients	122	24.1	26.6
USA [43]	Non-anxious community sample	32	33.1	12.5
	SAD patients	165	32.4	30.6
USA [38]	Undergraduates	1049	n/a	20.0

**TABLE 4: Literature Review of SPAI Difference Scores**

Note: \*current study, n/a = information not available.

The female-male ratio of probable SP diagnoses in our sample was similar to that found in previous studies conducted in Finland, but the SP prevalence in our study was higher than these other studies [53-54]. Ranta and colleagues [53], for example, estimated a 12-month prevalence of 3.2% for social phobia and 4.6% prevalence for sub-clinical social phobia among 12 to 17 year old adolescents using the SPIN and confirmed SAD diagnoses with a semi-structured interview. The authors also suggested that the prevalence of SAD rose as age increased (from 12 to 17 years), thus approaching our adult population estimate, and including the ages of peak pubertal changes, known correlates with SA symptoms. Contrary to our study and the Ranta, et al. study [53], Pirkola and colleagues [54] reported a 12-month prevalence of 1% for social phobia in Finnish adults (M age = 45.3 years) using the Munich version of the Composite International Diagnostic Interview [55]. The difference between prevalence rates of SAD estimated in Finland may be explained with different methodologies used in studies. Specifically, the participation rate of socially anxious individuals may be higher when using self-report surveys than in studies requiring direct interviews and clinical examinations. Also, our sample consisted exclusively of parents, where as Ranta's [53] sample were adolescents and Pirkola's [54] sample included adults with and without children.

There were several limitations in our study: First, the prevalence of SAD in our sample, needs to be interpreted cautiously, as we did not confirm SAD scores with clinical diagnostic tools, such as structured diagnostic interviews (The Structured Clinical Interview for DSM-IV, The Anxiety Disorders Interview Schedule for DSM-IV) or diagnostic criteria (i.e., DSM-IV, ICD-10). We employed two SAD self-report measures; individual high on fear of negative evaluation may in fact report their symptoms more accurately via self-report when compared with diagnostic interviews, as the interpersonal interview situation itself may trigger a participant's concern with the desire for approval and increase his/her distress regarding negative evaluation during the interview setting [56-62]. Second, although the focus of our study was specifically to assess subjective self-reported social anxiety symptoms using the SPAI and BFNE-S, future studies will include multi-method assessment (e.g., self-report and structured clinical interview), in order to more comprehensively assess the presence of SA symptoms and clinical diagnoses and in order to minimize the potential for self-report biases. Also, in previous studies [63], number of siblings in families was significantly associated with parental stress. We did not collect data

on current family size. Thus, in future studies it would be important to gather information regarding current family size and number of siblings to investigate whether this association is consistent when looking at social anxiety symptoms and to determine if statistical models should include these data. Third, our data did not include age information for all male participants due to data collection error, thus preventing us from including all male participants' age in the statistical models. Finally, our adult sample was derived from general parent population, that is, all of our adult participants had children; thus, our sample may not be fully representative of a general community sample.

## Conclusions

In conclusion, females scored statistically significantly higher than males on all SPAI and BFNE-S scales, with exception of the SPAI avoidance subscale. Non socially-anxious females seem to be more prone to fear social interaction and being the focus of attention than non socially-anxious males. For socially-anxious males, behavioural avoidance may be a more prominent symptom than for socially-anxious females. Finnish versions of the SPAI and BFNE-S are good additions to Finnish screening tools to detect SA in adults.

## Additional Information

### Disclosures

**Human subjects:** Consent was obtained by all participants in this study. The Ethics Committee of the Northern Ostrobothnia Hospital District issued approval N/A. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** The research was supported by The Alma and K. A. Snellman Foundation, Oulu, Finland (PI: S. Kuusikko-Gauffin), Child Psychiatric Research Foundation, Finland (PI: S. Kuusikko-Gauffin), Emil Aaltonen Foundation, Finland (PI: H. Ebeling, S. Kuusikko-Gauffin), Sigrid Juselius Foundation, Finland (PI: I Moilanen). **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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Authors' Contributions: SKG participated in the design of the study, carried out the data collection, performed statistical analyses, and wrote the manuscript. RAPW participated in the design of the study, helped with statistical analyses, contributed to writing the manuscript and completed the language check/editorial review for the manuscript. M-LM, HE, KJ and IM helped to draft the manuscript. SKG, HE, IM also received funding for the study. All authors read and approved the final manuscript. Acknowledgements: We want to thank the participants of the study.

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