

## Social phobia symptoms: prevalence, sociodemographic correlates, and overlap with specific phobia symptoms

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### Abstract

**Background:** Social phobia (SP) is a highly prevalent disorder in Western countries, but is rather rare in Eastern societies. Prevalence rates range from 0.5% in Eastern samples up to 16% in Western studies. Its prevalence in Israel, an Asian state characterized by Western culture, has not yet been studied. The present study aimed to assess the prevalence of SP symptoms in a nonclinical sample of Israeli adolescents, to characterize sociodemographic correlates of SP symptoms and to evaluate comorbidity with specific phobia symptoms.

**Methods:** Participants included 850 young soldiers from the Israel Defense Forces. Measures included the Liebowitz Social Anxiety Scale (LSAS; self-report version), a questionnaire on specific fears and phobias, and a sociodemographic questionnaire. Clinical and demographic correlates of SP were also examined.

**Results:** Probable SP (LSAS  $\geq 80$ ) was present in 4.5% of the sample. Overall, SP symptoms were reported by a great percentage of the subjects, as displayed by the rather high mean LSAS scores (29; SD = 23.79) in this nonclinical sample. The following variables were accompanied by higher LSAS scores according to our regression model: inability to perform command activities, receiving psychotropic medication before army service, having less than two friends, shy family members, and treatment during military service. Subjects with probable SP had a rate of comorbidity with specific phobia symptoms of 44%.

**Conclusions:** Our findings corroborate those from other studies in Western countries, both regarding the high prevalence of SP symptoms and its demographic and clinical correlates, as well as regarding the high overlap rate with specific phobia symptoms.

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### 1. Introduction

Social phobia (SP) is a chronic anxiety disorder characterized by fear of embarrassment in a social context, with secondary attempts of avoidance. Social phobia is characterized by significant disability and chronicity. It may lead to a restriction in one's lifestyle, significantly impact important life decisions, and often prevents one from making the most of available opportunities [1]. Individuals with SP are more likely to develop disabilities in the areas of school, work, and social life, with particular problems

initiating relationships with the opposite sex. Furthermore, over time, increased disability and a reduced quality of life, as well as increasing rates of comorbidity with secondary mental disorders (ie, depression, substance abuse), can be expected [2-6].

Early studies of SP in Western societies reported an estimated prevalence of 1% to 4% [7,8]. More recent studies, which have used more sophisticated tools, even reported rates of 10% to 13% [9-11]. The prevalence of SP in Eastern societies, although less studied, has been reported to be much lower, namely, 0.4% in a rural Taiwanese village [12]. The significantly higher rate of SP in the Basle Epidemiological Study (16% [13]) as compared with the Southeast Asia surveys (0.4%-0.6%) is truly intriguing [12,14]. It remains unclear whether the difference between prevalence rates found in Western and Eastern studies is an accurate reflection of the situation or is due to different

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constructs and mental representations of this condition in Asia [1]. Although SP states do exist in Eastern societies (ie, *taijin kyofusho*) [15], it is possible that Eastern emphasis on social cohesion and interaction affects the clinical characteristics of anxiety. That is, anxiety among Eastern individuals is characterized not by individual performance per se, but rather by the disruption of social harmony.

Given Israel's unique social and cultural diversity, as a function of its immigrant community from both Western and Eastern countries, it stands to reason that the study of the prevalence of SP symptoms in an Israeli sample of young adults is likely to shed new light onto this disorder and its potential risk factors. To our knowledge, there has yet to be published a study examining the rate of SP in Israel, despite the fact that several studies have addressed the epidemiology of mental disorders in Israel. Levav et al [16] examined the prevalence of mental disorders in a 10-year cohort of young Israeli adults and reported a point prevalence of phobic disorders (including SP) of 2.8%, less frequent than in American, Canadian, and Australian samples. Specific data on SP rates were not provided.

Israeli society is characterized by specific demographic, security, and cultural aspects, some of which may affect social interactions and possibly the rate of SP [17-21]. As a part of an international research study, Harell et al [18] reported in a large Israeli sample of adolescents (age 11-17; N = 8394) that approximately a quarter of subjects reported feeling socially rejected (remain alone, do not participate in social activities, encounter difficulties in groups). In addition, one fifth of the respondents reported a subjective feeling of loneliness very often, more among boys. Subjective feelings of loneliness were more frequent in the older age group (age >15). Relative to European youth, Israeli adolescents displayed low problems of social rejection, whereas the rate of lonely students was among the highest. Social rejection and loneliness were prevalent among young immigrants to Israel (especially those with poor economic status), as compared with Israeli-born pupils. Thus, although positive social interactions exist among Israeli youth, a relatively large group (new immigrants, low socioeconomic class) experiences loneliness.

Another issue that might impact the prevalence of SP in Israel is the unstable political environment including terrorist attacks and threats of war [19]. In a study of 676 Israeli children, Ginter et al [17] reported two types of anxiety, one worrying about what will happen and the other related to "social problems" and speculated that the potential attack from others coupled with the strong group identity and sense of group cohesiveness found in Israel may contribute to a form of social concern or anxiety [17]. Doubts about being able to meet the group's expectations could result in a concern about fear of rejection or ostracism for not being able to fulfill one's obligation [17,21,22]. In fact, the strong group cohesiveness common to this environment may make children fear rejection more than in other cultures.

As reports on the prevalence of SP vary widely between countries, epidemiological research in Israel, a multicultural society, may provide important data. The high prevalence of SP in Western samples concurrent with the high rate of loneliness in the young population in Israel [18] have given impetus to study the epidemiology of SP in Israel and, in particular, in the Israel Defense Forces. This sample of young adults was chosen due to the fact that SP often begins during childhood or adolescence and, if left untreated, may be masked and complicated by subsequent disorders [1].

The study's objectives were as follows: (1) to assess the rate of SP symptoms in an Israeli sample of youngsters; (2) to characterize the sociodemographic characteristics (sex, place of birth, education, and relationships) of those with social anxiety symptoms; (3) to examine possible risk factors for the development of SP; (4) to examine whether SP scores differ as a function of military profession (medics vs mechanics). Given that medics are required by the inherent characteristics of their profession to interact with others, we hypothesized that SP symptoms would be more frequent in the mechanics group; and finally (5) to assess overlap between specific phobic symptoms and SP symptoms.

## 2. Methods

### 2.1. Sample

Participants included 900 new soldiers, recruited during their secondary course, at the Military Medicine School (n = 450) or at the Mechanics School (n = 450). The school for military medicine teaches courses for medics and nurses, whereas the school for mechanics teaches mechanics and electricians. Of the initial sample, 23 soldiers with inadequate knowledge of Hebrew or with severe reading/comprehension or organic difficulties were excluded from the study. Another 27 subjects refused to participate. Thus, 850 subjects participated in our study.

### 2.2. Procedure

After approval by the Military Ethics Committee, the study was described to the participants by a mental health officer. The mental health officer gave instructions and clarifications when required. After signing informed consent, the soldiers filled out the questionnaires in groups of 30 soldiers, anonymously, and in the following order.

The Liebowitz Social Anxiety Scale (LSAS; [23]) is a 24-item clinician-rated scale designed to measure both social interaction and performance-related anxiety. It assesses the degree of fear and avoidance on a Likert scale of 0 (no fear/avoidance) to 3 (high fear/avoidance) in 24 different social situations. Patients with mild SP usually score 30 to 40 points, whereas those with moderate/severe SP score around 50 to 80 points. The LSAS is highly cited as a measure of treatment efficacy [24-26]. It is also cited in prevalence studies, usually with complementary tools, such as the CIDI or the SCID. However, it has been also reported

to be efficient as a self-rated questionnaire [27-29]. The Hebrew version of the LSAS was validated in Israel [30] and was found to be effective in assessing SP symptoms, with psychometric properties similar to the clinician-rated tool. In the present study, we used the self-report format. The use of the LSAS was done after receiving authorization from Dr Michael Liebowitz, who created the LSAS.

The Specific phobia questionnaire addressed questions on lifetime fears of animals (snakes, insects, birds, rats, or other animals); storms, thunder, or lightning; close places; flying; heights; injections, dentists, and injuries; and being in water (pool, lake, sea) and being alone. This list of fears and phobias was used based on the seminal work by Curtis et al [31] with the National Comorbidity Survey data [9]. These items, although not identical, are similar to the *DSM-IV-TR* subtypes [2]. Based on *DSM-IV-TR* criteria, the following true-false questions were used to define a phobia: (1) I give up things as a result of my fear; (2) My fear is greater than justified; (3) I cannot control my fear. If subjects answered all three questions in the affirmative, a phobic symptom was defined for each object and/or situation [32]. Fear was defined if at least one of the three questions was endorsed.

**Demographic and clinical questionnaire:** The subjects responded to several demographic questions (age, sex, country of origin, residence, social/academic achievements), perceived ability to perform command duties (answered subjectively by the respondent within a yes/no format), shy family members, and to questions on treatment received prior or during military service.

### 2.2.1. Data analysis

Statistical analysis was performed with the Statistical Package for the Social Sciences, Version 9.0.1. The LSAS scores were analyzed both as continuous variables and as definitive variables. Probable SP was determined when the LSAS score was  $\geq 80$ . This cutoff score was chosen according to an Israeli register of SP patients at the Geha Anxiety Disorders Clinic, which included 89 young SP outpatients (age 17-25) diagnosed with the MINI [33] and having a mean LSAS score of 79.45 (SD = 24.79) (Marom, personal communication, 2003). One can see that a score of 80 or higher requires a score of "2" on 20 questions on fear and avoidance, out of the total of 24 items. The rate of SP (LSAS  $\geq 80$ ) was calculated in the whole sample and in the two subsamples (schools of medics and mechanics). We then used the LSAS score as a continuous variable and using *t* test analyses, we compared the LSAS scores across demographic variables (sex, place of birth, place of living, education, type of soldier, etc). The analyses in our study were mainly exploratory. Linear regression analysis, using dummy variables for categorical variables, was performed to determine relative predictors of SP symptoms (ie, LSAS score). We also performed a logistic regression to look at predictors of group membership according to the LSAS  $\geq 80$  cutoff score. Parameters included in the regression

analyses were those background personal variables that were found to significantly affect the LSAS scores.

We also examined the rate of phobic symptoms and the relationship between the rate of SP and the number of

Table 1  
Demographic characteristics of the sample (N = 850)

Sex	
Males	535 (63)
Females	315 (37)
Country of birth (%)	
Israel	82
Soviet Union	12
North America/Europe	2
Ethiopia	1
Residence	
Urban	668 (78)
Rural	171 (20)
Done matriculation exams	
Yes	580 (75)
Partial	132 (17)
No	61 (8)
Absenteeism at high school	
Yes	193 (25)
No	581 (75)
Avoid class participation	
Yes	117 (13)
No	708 (84)
Present romantic relationship	
Yes	348 (45)
No	424 (55)
At least two close friends	
Yes	710 (92)
No	69 (8)
Blushing/embarrassment in public <sup>a</sup>	
Yes	175 (20)
No	664 (77)
Shy family members	
Yes	190 (25)
No	569 (75)
Divorced parents	
Yes	125 (14)
No	610 (82)
Psychological treatment before enlistment	
Yes	80 (10)
No	685 (90)
Mental treatment during army service	
Yes	70 (9)
No	693 (91)
Psychiatric military profile <sup>b</sup>	
Yes	39 (4)
No	801 (95)
Received psychotropic medications	
Yes	50 (6)
No	713 (93)
Family member in psychiatric treatment	
Yes	73 (10)
No	654 (90)

Data are presented as number (%).

<sup>a</sup> Sixty percent of these reported that the onset of the difficulty began before age 15.

<sup>b</sup> A psychiatric profile denotes psychological problems that limit soldiers' possibilities during military service with regard to war duties and distance from home.

phobic symptoms, by evaluating the mean number of phobic symptoms in subjects with a mean LSAS score of 29 or less, a LSAS score of 30 to 79, and a score of 80 or higher.

### 3. Results

The subjects' mean age was 19 years (SD = 0.943; range, 18-25 years). The subjects had a mean of 12 years of education (SD = 0.46), with a range from 8 to 16 years. Additional characteristics of the sample are presented in Table 1.

#### 3.1. LSAS items rated as 3 (severe)

The following items were rated by a considerable percentage of subjects as "3" (severe) (Table 2): item 6 (acting, performing, or giving a talk in front of an audience) (14.2% for anxiety and 14.7% for avoidance), item 20 (giving a report to a group) (13.2% for anxiety and 13.8% for avoidance), and item 21 (trying to pick someone) (11.2% for anxiety and 13% for avoidance).

#### 3.2. LSAS scores above 80

When using the cutoff score of 79/80 as a criterion for probable SP, we found that 4.5% of the total sample had scores above this cutoff score, 1.6% in the medics group and 8% in the mechanics group. A  $\chi^2$  analysis showed

Table 2  
List of LSAS items rated by subjects with a "3" (severe) on anxiety and avoidance

	Anxiety (%)	Avoidance (%)
1. Telephoning in public	2.6	5.3
2. Participating in small groups	2.9	3.7
3. Eating in public places	2.2	3.1
4. Drinking with others in public	1.8	2.9
5. Talking to people in authority	5.5	5.2
6. Acting, performing, or giving a talk in front of an audience	14.2	14.7
7. Going to a party	2.7	5.3
8. Working while being observed	5.3	5.2
9. Writing while being observed	2.9	3.5
10. Calling someone you don't know very well	3.8	4.1
11. Talking with people you don't know very well	4.4	5.1
12. Meeting strangers	4.5	5.4
13. Urinating in a public bathroom	5	10.2
14. Entering a room when others are already seated	3.9	5.1
15. Being the center of attention	6.4	7.7
16. Speaking up a meeting	4.8	6.8
17. Taking a test	7.3	4.5
18. Expressing a disagreement to people you don't know very well	2.5	3.8
19. Looking to people you don't know very well in the eyes	4.2	5.8
20. Giving a report to a group	13.2	13.8
21. Trying to pick up someone	11.2	13
22. Returning goods to a store	6.5	11.5
23. Giving a party	5.3	8.3
24. Resisting a high pressure sale-person	2.9	7.2

Table 3  
LSAS Scores of the various subgroups (means and SD)

Variable	Mean (SD)	P <sup>a</sup>
Sex		
Male	29.26 (26.11)	NS
Female	28.66 (19.21)	
Type of soldier		
Medic	27.16 (18.41)	.013
Mechanic	31.4 (29.28)	
Country of birth		
Israel	28.97 (24)	NS
Abroad	28.11 (22.26)	
Residence		
Urban <sup>b</sup>	28.57 (24.15)	NS
Rural	29.54 (21.83)	
Absenteeism		
Yes	33.59 (30.15)	.002
No	27.39 (21.09)	
Matriculation exams		
Yes	27.95 (26.22)	.001 <sup>c</sup>
Partial	29.78 (28.10)	
No	42.25 (30.35)	
Divorced parents		
Yes	32.1 (28.78)	NS
No	28.23 (22.68)	
Boyfriend/girlfriend		
Yes	26.81 (23.97)	.019
No	30.84 (23.49)	
At least two friends		
Yes	27.46 (21.91)	.001
No	51.74 (36.53)	
Start of SP problems before age 15		
Yes (98)	52.96 (28.29)	.047
No (61)	43.89 (27.11)	
Family member in treatment		
Yes	37.26 (26)	.001
No	26.2 (22.07)	
Treatment before enlistment		
Yes	42.26 (32.93)	<.001
No	27.48 (22.14)	
Treatment during military service		
Yes	36.18 (28.31)	.008
No	28.26 (23.25)	
Psychiatric profile		
Yes	30.94 (25.88)	NS
No	28.88 (23.69)	
Received psychotropic medications		
Yes	52.21 (36.93)	<.001
No	27.49 (22.03)	
Family shyness		
Yes	45.94 (36.55)	<.001
No	27.21 (21.44)	
Perceived command ability		
581 Yes	25.21 (19.91)	<.001
134 No	45.87 (30.81)	

<sup>a</sup> Two-tailed *t* test.

<sup>b</sup> Category 3 (n = 44) had higher scores on analysis of variance.

<sup>c</sup> Analysis of variance.

that the difference reached statistical significant ( $\chi^2_1 = 18.5$ ,  $P < .001$ ).

#### 3.2.1. LSAS mean scores

The mean scores for the entire sample were 29 (SD = 23.8), 13.8 (SD = 12.7), and 15.2 (SD = 12.4) for the total



LSAS score, the fear subscale, and the avoidance subscale, respectively. The Cronbach  $\alpha$  was 0.93 and 0.92 for the fear and avoidance subscales, respectively. The two subscales correlated significantly with one another ( $r = 0.81, P = .01$ ).

The LSAS scores of the subjects as a function of various demographic and clinical variables are displayed in Table 3 (a Bonferroni correction was made for multiple comparisons: significance was noted when  $P < .0025$ ). The following variables were accompanied by significantly higher LSAS scores: school absenteeism ( $t_{772} = 3.2, P = .002$ ), not having at least two good friends ( $t_{777} = -7.2, P < .001$ ), family member in treatment ( $t_{725} = 5.7, P = .001$ ), mental treatment before enlistment ( $t_{763} = 5.3, P < .001$ ), receiving psychotropic medications in the past ( $t_{761} = 7.0, P < .001$ ), shy family members ( $t_{757} = 6.5, P < .001$ ), and perceived inability to perform command activities ( $t_{713} = -9.6, P < .001$ ). Owing to Bonferroni correction, the following variables displayed only a trend toward significance: type of soldier (mechanic) ( $t_{844} = -2.5, P = .013$ ), not being presently involved in a romantic relationship ( $t_{770} = -2.4, P = .019$ ), beginning of SP symptoms before age 15 ( $t_{157} = 2.0, P = .047$ ), and mental treatment during military service ( $t_{761} = 2.7, P = .008$ ). Finally, based on a 1-way analysis of variance and Tukey HSD post hoc test, subjects who did not complete their matriculation examinations showed higher LSAS scores ( $F_{2,771} = 7.53, P = .001$ ) than those with partial or complete examinations. The following variables did not affect the LSAS scores: sex, country of birth, type of residence (urban vs rural), divorced parents, and psychiatric lowered profile.

A stepwise regression analysis was used to examine the relative variance in the LSAS total score as a function of those variables found to be statistically significant in the previous analysis. The total  $R^2$  was 0.21 ( $F_{1,775} = 36, P < .001$ ). The final model included perceived inability to command ( $R^2_{\text{change}} = .122, P < .001$ ), receiving medications before army service ( $R^2_{\text{change}} = .051, P < .001$ ), having less than two friends ( $R^2_{\text{change}} = .018, P < .001$ ), shy family members ( $R^2_{\text{change}} = .014, P = .001$ ), and treatment during military service ( $R^2_{\text{change}} = .006, P = .019$ ).

We also performed a logistic regression to look at predictors of group membership (SP or healthy) with a

Table 4  
Distribution of number of fears and phobic symptoms

	Fears	Phobic symptom
No fear/phobia	434 (50.9)	790 (91.3)
One fear or phobic symptom	172 (20.2)	4 (0.5)
2	101 (11.8)	17 (2)
3	52 (6.1)	9 (1)
4	41 (4.8)	11 (1.3)
5	23 (2.7)	12 (1.4)
6	13 (1.5)	8 (0.9)
7	9 (1.1)	8 (0.9)
8	8 (0.9)	6 (0.7)

The data on fears and phobic symptoms are presented in this table for clarity and brevity. Data are presented as number (%).

Table 5

Relationship between LSAS score and number of phobic symptoms (N = 850)

No. of phobic symptoms <sup>a</sup>	LSAS score		
	0-29	30-79	$\geq 80$
Group 1 (0/1 phobic symptoms)	459 (63)	250 (34.3)	20 (2.7)
Group 2 (2-4 phobic symptoms)	6 (30)	10 (50)	4 (20)
Group 3 ( $\geq 5$ phobic symptoms)	6 (16.2)	19 (51.4)	12 (32.4)

Data are presented as number (%).

<sup>a</sup> Numbers in parentheses constitute the rate of specific LSAS score among those with 0/1 or 2/3/4 or 5/6/7/8 specific phobic symptoms, respectively.

cutoff score of 80 or higher. The following variables were found to increase the risk for SP: perceived inability to perform command duty ( $P < .001$ , odds ratio = 6.5, confidence interval [CI] 3-14), shy family members ( $P < .001$ , odds ratio = 4.7, CI 1.9-11.0), having less than two friends ( $P = .003$ , odds ratio = 4.4, CI 1.9-11), and finally school absenteeism ( $P = .018$ , odds ratio = 2.7, CI 1.19-6).

### 3.3. Overlap with specific phobia symptoms

Overall, 8.7% of our sample (64 males and 17 females) had one phobic symptom or more, representing 11% of the males and 5% of the females. Just over half of the sample did not report any fear at all (50.9%) and most of the sample did not report any phobic symptoms (91.3%).

One can see in Table 4 that subjects who had more phobic symptoms also tended to have higher LSAS scores. Based on a nonparametric correlational analysis, we found a significant positive correlation between the number of phobic symptoms and the LSAS score (Spearman  $\rho = 0.245, P = .001$ ). This relationship is clearly displayed in Table 5.

## 4. Discussion

The main findings of this study are as follows: the prevalence of probable SP was 4.5%, similar to several studies in Western countries, and higher than rates reported in Eastern countries. Based on a regression analysis, several factors predicted higher scores on the LSAS: perceived inability to perform command activities, receiving medications before army service, lack of friends, shy family members, and treatment during military service. These factors accounted for 21% of the LSAS variance. As regards overlap with specific phobia symptoms, we found a significant positive correlation between the number of specific phobic symptoms and the LSAS score. Those with probable SP (LSAS  $\geq 80$ ) had a 44% chance of also having a specific phobic symptom.

Our results, consistent with Ginter et al [17], indicate that sex does not affect the LSAS scores and is not related to SP. This is contrary to other reports that maintain that SP (as most anxiety disorders) is more prevalent among females [11,34]. However, clinical samples show the opposite trend

[11], as men seek treatment more than women, perhaps due to social pressures. A possible explanation for our results derives from the selection bias of the study sample, especially among the female participants. That is, there is a tendency either not to recruit or to send those females who report significant mental symptoms to clerk duties (as opposed to pretentious courses). These factors may have contributed to the relatively low rates of anxious females in our sample.

It was hypothesized that immigrants would have increased rates of SP given the need to adapt to new cultural norms under conditions of stress [15]. It was thought that these factors might result in social fears and subsequent avoidant behavior [1,18]. Our results indicate that immigrants (especially from the former USSR) did not have higher rates of SP symptoms, perhaps as a result of selection bias (exemption of low-functioning young adults).

Subjects living in urban residences did not have different LSAS scores than those residing in rural residences. This is consistent with the studies by Magee et al [11] and Ginter et al [17], who did not find increased social anxiety in the city, but inconsistent with Olfson et al [20] who reported higher SP in small towns or rural areas. Our findings, however, may be explained by cultural differences in our sample. That is, in Israel, rural settlements are characterized by high group cohesion, thus neutralizing the effect of increased SP symptoms in rural areas reported by Olfson et al [20].

Individuals with shy family members had higher LSAS scores. This is in accordance with the literature, favoring a familial role (either genetic or behavioral modeling) for the development of SP [35,36]. It should be noted that this finding is based purely on the report of the participants and therefore may be biased. Additional variables characteristic of SP patients found in our study, similarly to those in the literature, were poor educational achievements [1,20,37] and past and current mental health treatment [20]. Individuals with SP had lower perceived command ability, an expected finding. Also as expected, we found that medics did indeed report less SP symptoms than mechanics. As mentioned earlier, this might be explained by the tendency of anxious recruits to avoid anxiety-provoking occupations.

Despite not being able to make assertions about comorbidity between SP and specific phobia due to the methodology used, our reported overlap rate between SP and specific phobic symptoms (44%) corroborates rates of comorbidity reported in the National Comorbidity Survey (37.6%) [9] and the Epidemiological Catchment Area (60.8%) [8]. There is a considerable agreement from various cross-sectional community studies that among SP subjects, most also have at least one other anxiety disorder [38], especially in the generalized subtype. We also found a higher rate of phobic symptoms in those with higher LSAS scores (the LSAS score being higher in generalized SP than in the nongeneralized subtype). This is in accordance with the work of Curtis et al [31], who reported the following frequencies of SP: 29% of those with only one fear, 42.4%

of those with 2 to 3 fears, 53.5% of those with 4 to 5 fears, and finally 74.7% of those with 6 to 8 fears. Moreover, in persons with specific phobia, SP was the most frequent comorbid anxiety disorder [31].

Comorbidity in SP has been shown to increase suicidality and disability and reduces life quality [39]. Comorbidity also results in using more medical resources [1]. The clinical relevance of the comorbidity between SP and specific phobia is unknown, as comorbidity studies in SP usually deal with depression or substance abuse. It is not clear whether comorbid specific phobia affects the treatment or clinical course of SP, and we are unaware of studies examining this issue. We recommend studying this issue further to support the intuitive assumption that this overlap decreases quality of life and has a negative effect on the course of SP.

The limitations of the present study include the exclusion of young adults who did not enlist, thus leading to a possible bias (as conscripts might have less SP than those who do not enlist). In fact, by virtue of the fact that lower-functioning young adults receive an exemption from army service, the present sample is not entirely representative of the general population. Second, the self-report design of the study does not allow for the assessment of response bias. It should be noted, however, that the validity of our results is reinforced by similar findings reported in the literature. Another important limitation is the lack of use of a standardized diagnostic interview for SP due to the military Helsinki board's decision. This limited our ability to discuss the prevalence of SP directly, although we believe that the use of the 79/80 cutoff score is a reasonable decision, requiring of course psychometric validation.

The prevalence of SP has important implications for large communities, such as the Israel Defense Forces or the education system. Social phobia might negatively affect the function of soldiers and we assume that many soldiers presenting with adjustment disorder (the most frequent diagnosis in the military) may actually have SP [40]. Providing specific treatment and enhancing interpersonal skills are likely to alleviate anxiety and avoidance and, in turn, prevent unnecessary discharges from the military. Furthermore, diagnosing SP early at the conscription office would provide a more effective assessment of soldiers, especially those with problematic psychiatric status [41].

Spielberger and Diaz-Guerrero [21] advocated the need for research on anxiety from various cultural perspectives. This focus could clarify which aspects of anxiety are genuinely universal in nature, that is, which differences or similarities exist with respect to the nature, extent, and intensity of the anxiety experience. Such research could provide insight into the influence of unique cultural environments on the development of anxiety [21]. Social phobia appears to be a highly conserved emotion that is arguably observed in other species and that occurs across human societies [15]. Similarly, behavioral inhibition, shyness, and embarrassment also occur in all cultures. Our

findings strengthen the notion that SP symptoms are prevalent in Israel, a country characterized by immigration and intermingling of Eastern and Western societies. Given our results, the study of SP rate within the general Israeli population, with well-accepted diagnostic interviews, is of importance. Further studies in different cultures might improve the understanding of this intriguing topic, especially with new studies with non-Western samples to reexamine the rate of SP and possible protective factors.

## References

- [1] Wittchen HU, Fehm L. Epidemiology, patterns of comorbidity, and associated disabilities of SP. *Psychiatr Clin North Am* 2001;24:617-41.
- [2] American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington (DC): APA; 1994.
- [3] Lecrubier Y, Wittchen HU, Faravelli C, Bobes J, Patel A, Knapp M. A European perspective on social anxiety disorder. *Eur Psychiatry* 2000;15:5-16.
- [4] Lepine JP, Pelissolo A. Why take social anxiety disorder seriously? *Depress Anxiety* 2000;11:87-92.
- [5] Lydiard RB. Panic disorder and social phobia: possible implications of comorbid depression for drug therapy. *Anxiety* 1996;2:61-70.
- [6] Wittchen HU, Fuetsch M, Sonntag H, Muller N, Liebowitz M. Disability and quality of life in pure and comorbid social phobia. Findings from a controlled study. *Eur Psychiatry* 2000;15:46-58.
- [7] Faravelli C, DeglInocenti BG, Giardinelli L. Epidemiology of anxiety disorders in Florence. *Acta Psychiatr Scand* 1989;79:308-12.
- [8] Schneier FR, Johnson J, Hornig CD, et al. Social Phobia: comorbidity and morbidity in an epidemiologic sample. *Arch Gen Psychiatry* 1992;49:282-8.
- [9] Kessler RG, McGonagle KA, Zhao S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. *Arch Gen Psychiatry* 1994;51:8-19.
- [10] Kessler RC, Stein MB, Berglund P. Social Phobia subtypes in the National Comorbidity Survey. *Am J Psychiatry* 1998;155:613-9.
- [11] Magee WJ, Eaton WW, Wittchen HU, et al. Agoraphobia, Simple phobia, and SP phobia in the National Comorbidity Survey. *Arch Gen Psychiatry* 1996;53:159-68.
- [12] Hwu HG, Yeh EK, Chang LY. Prevalence of psychiatric disorders in Taiwan defined by the Chinese Diagnostic Schedule. *Acta Psychiatr Scand* 1989;79:136-47.
- [13] Wacker HR, Mullerjans R, Klein KH, Battergay R. Identification of cases of anxiety disorders and affective disorders in the community according to ICD-10 and DSM-III-R by using the composite international diagnostic interview (CIDI). *Int J Methods Psychiatr Res* 1992;2:91-100.
- [14] Lee CK, Kwak YS, Yamamoto J, Rhee H, Kim YS, Han JH, et al. Psychiatric epidemiology in Korea: Part II: urban and rural differences. *J Nerv Ment Dis* 1990;178:247-52.
- [15] Stein DJ, Matsunaga H. Cross-cultural aspects of social anxiety disorder. *Psychiatr Clin North Am* 2001;24:773-82.
- [16] Levav I, Kohn R, Dohrenwend BP, Shrout PE, Skodol AE, Schwartz S, et al. An epidemiological study of mental disorders in a 10-year cohort of young adults in Israel. *Psychol Med* 1993;23:691-707.
- [17] Ginter EJ, Trotzky AS, Lufi D, Richmond BO. Anxiety among children in Israel. *Psychol Rep* 1989;65:803-9.
- [18] Harel Y, Kenny D, Rahav G. Youth in Israel: social welfare, health and high-risk behaviors in an international view. Jerusalem: Joint-Brookdale Institute; 1997.
- [19] Landau SF, Beit Hallahmi B. Israel: aggression in psychohistorical perspective. In: Goldstein AP, Segall MH, editors. *Aggression in global perspective*. New York: Pergamon; 1983. p. 261-86.
- [20] Olsson M, Guardino M, Struening E, Schneier FR, Hellman F, Klein DF. Barriers to the treatment of social anxiety. *Am J Psychiatry* 2000;157:521-7.
- [21] Spielberger CD, Diaz-Guerrero R, editors. *Cross-cultural anxiety*. New York: Taylor & Francis; 1990. p. 59-70.
- [22] Sareen L, Stein M. A review of the epidemiology and approaches to the treatment of social anxiety disorder. *Drugs* 2000;59:497-509.
- [23] Liebowitz MR. Social phobia. *Mod Probl Pharmacopsychiatry* 1987;22:141-73.
- [24] Liebowitz MR, Schneier F, Campeas R, Hollander E, Hatterer J, Fyer A, et al. Phenelzine vs atenolol in social phobia. A placebo-controlled comparison. *Arch Gen Psychiatry* 1992;49:290-300.
- [25] Noyes R, Moroz G, Davidson JRT, Liebowitz MR, et al. Moclobemide in social phobia: a controlled dose-response trial. *J Clin Psychopharmacol* 1997;17:247-54.
- [26] Stein MB, Liebowitz MR, Lydiard B, Pitts CD, Bushnell W, Gergel I. Paroxetine treatment of generalized social phobia (social anxiety disorder): a randomized controlled trial. *Arch Gen Psychiatry* 1998;280:708-13.
- [27] Baker SL, Heinrichs N, Kim HJ, Hofmann SG. The Liebowitz Social Anxiety Scale as a self-report instrument: a preliminary psychometric analysis. *Behav Res Ther* 2002;40:701-15.
- [28] Fresco DM, Coles ME, Heimberg RG, et al. The Liebowitz Social Anxiety Scale: a comparison of the psychometric properties of self-report and clinician-administered formats. *Psychol Med* 2001;31:1025-35.
- [29] Oakman J, Van Ameringen M, Mancini C, Farvolden P. A confirmatory factor analysis of a self-report version of the Liebowitz Social Anxiety Scale. *J Clin Psychol* 2003;59:149-61.
- [30] Levin JB, Hermesh H, Marom S, Gur S, Wechter D. Psychometric properties and three proposed subscales of a self-report version of the Liebowitz Social Anxiety Scale translated into Hebrew. *Depress Anxiety* 2002;16:143-51.
- [31] Curtis GC, Magee WJ, Eaton WW, Wittchen HU, Kessler RC. Specific fears and phobias. Epidemiology and classification. *Br J Psychiatry* 1998;173:212-7.
- [32] Fredrikson M, Annas P, Fischer H, Wik G. Gender and age differences in the prevalence of specific fears and phobias. *Behav Res Ther* 1996;34:33-9.
- [33] Sheehan DV, Lecrubier Y, Sheehan H, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59(Suppl 20):22-33.
- [34] Judd LL. Social phobia: a clinical overview. *J Clin Psychiatry* 1996;55(Suppl 6):5-9.
- [35] Hudson JL, Rapee RM. The origins of social phobia. *Behav Modif* 2000;24:102-29.
- [36] Lieb R, Wittchen HU, Hofler M, Fuetsch M, Stein MB, Merikangas KR. Parental psychopathology, parenting styles, and the risk of social phobia in offspring: a prospective-longitudinal community study. *Arch Gen Psychiatry* 2000;57:859-66.
- [37] Furmark T, Tillfors M, Everz PO, et al. Social phobia in the general population: prevalence and socio-demographic profile. *Soc Psychiatry Psychiatr Epidemiol* 1999;34:416-24.
- [38] Fehm L, Wittchen HU. Comorbidity in Social Anxiety Disorder. In: Bandelow B, Stein DJ, editors. *Social Anxiety Disorder*. New York: Dekker Publications; 2004.
- [39] Lecrubier Y. Comorbidity in social anxiety disorder: impact on disease burden and management. *J Clin Psychiatry* 1998;59(Suppl 17):33-8.
- [40] Nardi C, Lichtenberg P, Kaplan Z. Adjustment disorder of conscripts as a military phobia. *Mil Med* 1994;159:612-6.
- [41] Mennin DS, Fresco DM, Heimberg RG, Schneier FR, Davies SO, Liebowitz MR. Screening for Social Anxiety Disorder in the clinical setting: using the Liebowitz Social Anxiety Scale. *J Anxiety Disord* 2002;16:661-73.