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Traumatic and socially stressful life events among persons with social anxiety disorder

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Abstract

This study examined the frequency of reexperiencing, avoidance, and hyperarousal symptoms most often associated with posttraumatic stress disorder (PTSD) among 45 persons with social anxiety disorder and 30 nonanxious controls in response to an extremely stressful social event (which did not satisfy *DSM-IV*'s PTSD Criterion A). Avoidance and hyperarousal in response to reminders of socially stressful events were common among patients; more than one-third would have met criteria for PTSD if these events satisfied *DSM-IV* PTSD Criterion A. Frequency of this PTSD-like symptom pattern did not differ among patients who did and did not experience another event that did satisfy PTSD Criterion A. Implications of these findings for the treatment of social anxiety disorder are discussed.

Keywords: Social anxiety disorder; Social phobia; Life events; Trauma

Etiological accounts of social anxiety disorder are varied and complicated by its heterogeneous symptom profile and a generally incomplete understanding of the causes of anxiety disorders. Nonetheless, the available evidence suggests that multiple genetic (Kendler, Neale, Kessler, Heath, & Eaves, 1992; Schwartz,

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Snidman, & Kagan, 1999) and environmental (Lieb et al., 2000) factors contribute to the emergence of social anxiety disorder.

The experience of a conditioning event is reported by a subset of individuals with anxiety disorders, in general, and social anxiety disorder, in particular, as having etiological significance (e.g., de Silva & Marks, 1999; Magee, 1999; Mulkens & Bögels, 1999; Öst & Hugdahl, 1981; Stemberger, Turner, Beidel, & Calhoun, 1995). However, little is known about the qualitative aspects of such events. Do these events involve ''actual or threatened death or serious injury, or a threat to the physical integrity of self or others . . . (and responded to with) intense fear, helplessness, or horror,'' such that they would meet *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV)* Criterion A for posttraumatic stress disorder (PTSD; American Psychiatric Association, 1994, pp. 427–428) as suggested by the findings of Magee (1999), who demonstrated an association between the experience of sexual assault in childhood and the later onset of social anxiety disorder? Or would these events generally be considered to be less impactful (e.g., feeling humiliated after a poor public performance; being rejected by a potential romantic interest), but still be experienced by persons with social anxiety disorder as extremely stressful, as suggested by findings that conditioning events and vicarious learning were associated with the later onset of fear of blushing (Mulkens & Bögels, 1999) and social anxiety disorder (Öst & Hugdahl, 1981)?

Although persons with other anxiety disorders rate life events as having a greater negative impact than do nonanxious controls (Rapee, Litwin, & Barlow, 1990), the degree to which events falling short of meeting PTSD Criterion A are associated with strong emotional reactions is unknown. That persons with social anxiety disorder may experience strong emotional reactions to events not commonly considered to be traumatic (i.e., events that do not satisfy Criterion A for PTSD), such as humiliating social and performance events, is suggested by an emerging line of research on the images and memories experienced by persons with social anxiety disorder. In a study by Hackmann, Clark, and McManus (2000), persons with social anxiety disorder reported negative, spontaneous, recurrent images of events that occurred around the time of the onset of the disorder, the content of which centered around feared social situations and was stable over time. Rachman, Grüter-Andrew, and Shafran (2000) reported that socially anxious college students reported more frequent intrusive thoughts and images about a past anxiety-provoking social event, which interfered with their concentration, than did nonanxious students.

Several recent investigations have described the nature of images in persons with social anxiety disorder. When recalling feared social situations, persons with social anxiety disorder were more likely to take an observer's perspective (seeing oneself as if through the eyes of another person) than normal controls, a pattern that was specific to social events. However, both persons with social anxiety disorder and normal controls took a predominantly field perspective (seeing events as if through one's own eyes) for memories of nonsocial situations (Wells,

Clark, & Ahmad, 1998; Wells & Papageorgiou, 1999). Other studies have shown that the memories of feared social situations among socially anxious persons come increasingly from the observer perspective as the anxiety associated with the event and the elapsed time after the event increased (Coles, Turk, Heimberg, & Fresco, 2001; Coles, Turk, & Heimberg, 2002). Furthermore, the performance attributions of persons with social anxiety disorder became increasingly internal, stable, and global as the anxiety associated with memories of social situations increased (Coles et al., 2001, 2002). Taken together, the negative, spontaneous, recurrent, stable images of social situations, which reportedly occurred in proximity to the onset of social anxiety disorder, along with shifts from field to observer perspectives and state to trait attributions as situations became more anxiety provoking, parallel the recurrent intrusive images, cognitive and emotional avoidance, enduring trait assumptions (e.g., I must always be on guard, the world is not a safe place), and increased arousal characteristic of PTSD. Therefore, both recall of specific stressful social events and reactions to these events may play a significant role in the onset, maintenance, and symptom profile of a subset of persons with social anxiety disorder.

The current study was exploratory and first sought to describe empirically the frequency of reexperiencing, avoidance and hyperarousal symptoms in connection with socially stressful non-Criterion A events among persons with social anxiety disorder and nonanxious controls. In addition, given evidence that social anxiety disorder is likely to co-occur with traumatic events in general (Boudreaux, Kilpatrick, Resnick, Best, & Saunders, 1998; Stein et al., 1996) and PTSD in particular (Davidson, Hughes, Blazer, & George, 1991; Orsillo, Weathers, et al., 1996), and that social anxiety disorder may develop subsequent to PTSD (e.g., Orsillo, Heimberg, Juster, & Garrett, 1996), Lydiard (2001) emphasized the importance of determining whether social anxiety disorder in the presence of trauma differs from social anxiety disorder in the absence of trauma. Towards this end, the second goal of the current study was to examine whether the frequency of reexperiencing, avoidance and hyperarousal symptoms in response to socially stressful non-Criterion A events differed between patients with social anxiety disorder who additionally reported experiencing a Criterion A event and those who did not. Comparisons on some dimensions were made to persons without significant psychological impairment, many of whom also experienced Criterion A and other socially stressful events.

1. Method

1.1. Participants and procedures

Participants with social anxiety disorder were recruited from among those who sought treatment for interpersonal or performance anxiety at the Adult Anxiety Clinic of Temple University ($n = 38$) or the Center for the Treatment and Study of

Anxiety at the University of Pennsylvania ($n = 9$). Comparison of these subsamples on study measures revealed differences on only one measure (see below), and they were pooled for further analyses. Control participants were recruited to participate in a study of persons without significant psychological distress conducted at the Adult Anxiety Clinic of Temple University (i.e., normal controls; $n = 30$). Participants were above the age of 18, fluent in the English language, and willing and able to give written informed consent.

All participants underwent a structured diagnostic interview, either the Anxiety Disorders Interview Schedule for *DSM-IV*, Lifetime Version (ADIS-IV-L; DiNardo, Brown, & Barlow, 1994) or the Structured Clinical Interview for *DSM-IV*, Clinician Version (SCID; First, Spitzer, Gibbon, & Williams, 1997). Participants received either a primary diagnosis of *DSM-IV* social anxiety disorder or did not meet criteria for any psychiatric diagnosis. Patients with a primary diagnosis of social anxiety disorder may have carried additional psychiatric diagnoses. Patients with primary diagnoses other than social anxiety disorder, with diagnoses of schizophrenia, major depression requiring immediate attention, an organic mental disorder, or at potential risk of self-harm were excluded.

All individuals who qualified for and agreed to participate in the study completed self-report measures of social anxiety disorder and related constructs. Participants also took part in a semi-structured, clinician-administered interview that examined the rates and severity of reexperiencing, avoidance and hyperarousal symptoms and functional impairment. Specifically, they were asked to describe one Criterion A and one socially stressful event that they had either experienced or witnessed. For each event, reexperiencing, avoidance and hyperarousal symptoms along with functional impairment were assessed.

1.2. Materials

1.2.1. Clinician-administered semi-structured diagnostic interviews

Administered by a Ph.D. psychologist or a doctoral student in Temple University's clinical psychology program, the ADIS-IV-L (DiNardo et al., 1994) is a semi-structured clinical interview providing *DSM-IV* diagnoses of various psychiatric disorders, including anxiety disorders, depressive disorders, and substance use disorders. The ADIS-IV-L has demonstrated excellent reliability ($\kappa = .75$) for the principal diagnosis of social anxiety disorder. However, interrater reliability has been more modest for PTSD ($\kappa = .59$; Brown, DiNardo, Lehman, & Campbell, 2001).

Administered at the Center for the Treatment and Study of Anxiety by doctoral-level psychologists, the SCID (First et al., 1997) is a clinician-administered interview widely used to determine *DSM-IV* diagnoses. Initial evaluations of reliability with the *DSM-IV* version of the SCID-I/P have been quite favorable. Ventura et al. (1998) calculated reliability based on the judgments of both experienced and neophyte interviewers about the presence or absence of each symptom rather than on diagnostic classification. Interrater reliability was

found to be excellent for both experienced ($\kappa = .87$) and neophyte ($\kappa = .82$) interviewers. Reliability reportedly remained high when the same interviewers were reassessed approximately 1 year later (experienced $\kappa = .76$; neophyte $\kappa = .77$).

1.2.2. Assessment of social anxiety disorder symptoms and other psychopathology

Participants completed questionnaires that assess social anxiety disorder and related constructs. The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998)[1] and the Social Phobia Scale[2] (SPS; Mattick & Clarke, 1998) measure anxiety in social interaction situations and in situations in which the person may be critically observed by others, respectively. These scales have been shown to be reliable instruments for the assessment of social anxiety disorder and to possess a high degree of convergent validity with other indices of social anxiety and avoidance (Brown et al., 1997; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998). The social phobia subscale of the Fear Questionnaire (FQS; Marks & Mathews, 1979) assesses fear-motivated avoidance of social situations and has demonstrated high retest reliability and ability to discriminate patients with social anxiety disorder from those with other anxiety disorders (Cox, Swinson, & Shaw, 1991; Marks & Mathews, 1979; Oei, Moylan, & Evans, 1991). The Quality of Life Inventory (QOLI; Frisch, 1994) is a measure of life satisfaction designed to complement symptom-oriented measures of psychological functioning. Retest reliability, internal consistency, convergent validity, and discriminant validity of the QOLI were found to be high (Frisch, Cornell, Villanueva, & Retzlaff, 1992). QOLI scores of patients with social anxiety disorder are substantially lower than those of comparison samples and improve as a function of cognitive–behavioral therapy (Eng, Coles, Heimberg, & Safren, 2001; Safren, Heimberg, Brown, & Holle, 1997). Finally, the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) is a measure of depressive symptoms and attitudes. The BDI is widely used and has demonstrated excellent reliability and validity (Beck, Steer, & Garbin, 1988). Psychometric characteristics of the BDI in a sample of persons with social anxiety disorder were recently reported by Coles, Gibb, and Heimberg (2001).

1.2.3. Assessment of reexperiencing, avoidance, and hyperarousal symptoms associated with socially stressful and Criterion A events

The Posttraumatic Diagnostic Scale-revised (PDS-revised) is based on the Posttraumatic Diagnostic Scale (Foa, Cashman, Jaycox, & Perry, 1997), which is a

[1] Two versions of the SIAS are currently available, one with 19 items, the other with 20 items. We used the 20-item version, which has been much more commonly used in published research.

[2] Temple and University of Pennsylvania patients were compared on all study measures. The only difference between groups appeared on the Social Phobia Scale, Temple $M = 39.06$, S.D. = 13.32; University of Pennsylvania $M = 27.00$, S.D. = 8.27; $t(39) = 2.29$, $P < .03$. Degrees of freedom reflect some missing data.

49-item self-report instrument that yields both a diagnosis of *DSM-IV* PTSD and an index of the severity of PTSD.[3] The 17 symptoms of PTSD (Criteria B–D) are rated on a 4-point scale from 0 (*not at all or only one time*) to 3 (*5 or more times a week/ almost always*). Additionally, duration of symptoms (Criterion E), functional impairment in a number of domains (Criterion F), and amount of time between the traumatic event and the onset of symptoms (to specify delayed onset) are assessed. In a validation study (Foa et al., 1997), 248 persons who had experienced, witnessed, or been confronted with a high magnitude stressor at least 1 month prior to the study completed the PDS and were administered the PTSD module of the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer, Williams, Gibbon, & First, 1990). Coefficients alphas were reported as .92 for the total symptom severity score, .78 for the reexperiencing cluster, .84 for the avoidance cluster, and .84 for the arousal cluster, indicating that each cluster represents a unified construct. Retest reliability of PTSD diagnosis derived from the PDS was .74 with 87% agreement for diagnoses at time one and a mean of 16 days later. Diagnoses obtained from the PDS and the SCID were compared to determine convergent validity and evidenced a kappa of .65 with 82% agreement between the two measures. Sensitivity was reported as .89, specificity as .75. Finally, concurrent validity was assessed by comparing scores obtained on the PDS with those of other measures of psychopathology. Greater PDS total and subscale scores were associated with greater depression, state and trait anxiety, intrusive and avoidant trauma symptoms.

For the purpose of the present study, the PDS was revised in several ways. First, the instrument was administered as an interview. Second, participants were prompted at the beginning of the interview to report in an open-ended fashion any potential socially stressful (i.e., non-Criterion A) and Criterion A events. Third, a checklist of 10 socially stressful/non-Criterion A events (e.g., verbally shamed/ ridiculed by a parent, guardian, or other adult) and one residual category was added to the existing checklist of Criterion A events. The list of socially stressful events was generated from situations included in the Liebowitz Social Anxiety Scale (Liebowitz, 1987) and the ADIS-IV-L. Care was taken to incorporate items representing social, performance, and assertiveness domains. Fourth, the PDS-revised was completed twice. Individuals first identified and orally described the non-Criterion A socially stressful event that was the most distressing to them and responded to the remainder of the interview with respect to that event. This step was repeated for the Criterion A event that was described by the person as most distressing. Non-Criterion A, socially stressful events were inquired about before Criterion A events so that individuals would not minimize the experience of socially stressful events. The participants' worst reported socially stressful and Criterion A events were examined and uniformly approved by three individuals familiar with social anxiety disorder and PTSD diagnostic criteria (BAE, RGH, and BPM) as meeting Criterion A or the study's criteria for socially stressful events.

[3] All applicable analyses were calculated based on both the number and severity of PTSD symptoms, and similar results were obtained.

2. Results

Two patients reported experiencing neither a Criterion A event nor a socially stressful event. Because these patients were not representative of the population of interest to the current study, they were excluded from all further analyses. The remaining patient sample ($n = 45$) was divided into two groups: those who reported experiencing exclusively socially stressful events (group SSE; $n = 16$; 35.6%) and those who also reported experiencing at least one Criterion A traumatic event (group TE; $n = 29$; 64.4%). As described previously, this division was made to determine whether persons with a history of at least one Criterion A event experience socially stressful events or endorse levels of social anxiety and other symptoms differently from persons without such a history.

Among the normal controls (NC; $n = 30$), 23.3% ($n = 7$) reported neither a socially stressful nor a Criterion A event; 23.3% ($n = 7$) reported a socially stressful event only; 6.7% ($n = 2$) reported a Criterion A event only; and 46.7% ($n = 14$) reported both a socially stressful and a Criterion A event. Comparisons were made among the two patient groups and the normal control group and included only those NC participants who reported events relevant to specific comparisons. More specifically, only those normal control participants who reported experiencing a socially stressful event ($n = 21$) were included in analyses of symptoms associated with socially stressful events (e.g., reexperiencing, avoidance, and hyperarousal symptoms associated with socially stressful events; rates of PTSD-like symptom pattern). Similarly, only those normal control participants who reported experiencing a Criterion A traumatic event ($n = 16$) were included in analyses of symptoms associated with these events (e.g., reexperiencing, avoidance, and hyperarousal symptoms associated with Criterion A traumatic events; rates of PTSD). The entire sample of normal control participants ($n = 30$) was included in full-sample analyses (e.g., characteristics of the study sample; severity of social anxiety disorder and depression and degree of life satisfaction).

Groups TE, SSE, and NC were compared on continuous and categorical demographic variables using three-group omnibus analyses of variance (ANOVAs) and chi-square (χ^2) analyses, respectively (see Table 1). No differences were found on age, annual income, number of years of education, sex, or employment status. However, differences were found on race and marital status. In post hoc 2×2 χ^2 analyses, the proportions of non-Caucasian participants in the combined patient group (33.33%) and the normal control group (23.33%) did not differ [χ^2 ($df = 1$, $n = 75$) = 0.87, *ns*, ES = 0.11].[4] However, there was a moderate difference in the percentage of non-Caucasian patients in group TE (44.83%) versus group SSE

[4] ES = effect size. Cohen's f effect size interpretations for ANOVAs (.10 = small, .25 = moderate, .40 = large) and Cohen's effect size interpretations for χ^2 tests of proportions (.10 = small, .30 = moderate, .50 = large) were used throughout this study.

Table 1
Characteristics of the study sample

	TE ($n = 29$)		SSE ($n = 16$)		NC ($n = 30$)		F
Age							
M	27.59		29.38		30.33		0.48
S.D.	9.21		10.10		12.67		
Annual income							
M	19310.86		33200.00		35675.86		2.08
S.D.	17990.97		47000.30		32645.12		
Education (years)							
M	14.39		14.44		15.07		0.59
S.D.	2.69		2.10		2.66		
	n	%	*n*	%	*n*	%	χ^2
Sex							
Female	18	62.07	8	50.00	11	36.67	3.81
Male	11	37.93	8	50.00	19	63.33	
Race							
Caucasian	16	55.17	14	87.50	23	76.67	6.07*
Non-Caucasian	13	44.83	2	12.50	7	23.33	
Employment							
Employed	23	79.31	12	75.00	27	90.00	2.01
Not Employed	6	20.69	4	25.00	3	10.00	
Marital Status							
Married	1	3.45	4	25.00	1	3.33	7.99*
Single	28	96.55	12	75.00	29	96.67	

Note. TE = patients who reported experiencing at least one Criterion A event; SSE = patients who reported experiencing exclusively socially stressful events; NC = normal controls. Sample sizes vary due to missing data.

* $P < .05$.

(12.50%) [χ^2 ($df = 1$, $n = 45$) = 4.85, $P < .05$, ES = 0.33].[5] In addition, the three groups differed with a moderate effect size on marital status. However, the total number of participants who were married ($n = 6$) was so small that the χ^2 test was not considered valid (A. Sockloff, personal communication, June 28, 2001). Therefore, conclusions that can be drawn from this result are limited and post hoc analyses were not pursued.[6]

[5] Analyses parallel to those performed to test the study hypotheses in which race was included as a factor were also conducted. No main effects of race and no interactions with race were found.

[6] Analyses parallel to those conducted to address the hypotheses of the current study, with marital status substituted for group membership as the independent variable, were also conducted. Although the total number of participants who were married ($n = 6$) was so small that it was not possible to conduct all analyses, in the analyses conducted, no main effects of marital status were found. Also due to sample size limitations, group could not be included along with marital status in these analyses. Therefore, it was not possible to determine the presence of interactions of marital status and group. Further, any conclusions from these findings should viewed with caution.

2.1. Number of reexperiencing, avoidance, and hyperarousal symptoms associated with socially stressful and Criterion A events

Two one-way multivariate analyses of variance (MANOVAs) were computed. The first MANOVA included participant group as the independent variable and number of reexperiencing, avoidance, and hyperarousal symptoms endorsed for the worst reported socially stressful event as the dependent variables. The second MANOVA included participant group as the independent variable and number of reexperiencing, avoidance, and hyperarousal symptoms endorsed for the worst reported Criterion A event as the dependent variables.

2.1.1. Socially stressful events

All 45 patients and 21 of the 30 normal controls reported experiencing a socially stressful event. In addition, the 29 patients in group TE reported experiencing a Criterion A event. Among patients who reported any reexperiencing, avoidance, and hyperarousal symptoms associated with their respective socially stressful event ($n = 37$), 94.60% ($n = 35$) reported experiencing such symptoms for more than 3 months and 5.40% ($n = 2$) reported experiencing such symptoms for less than 1 month. The MANOVA for reexperiencing, avoidance, and hyperarousal symptoms associated with socially stressful events [Wilks' $\lambda = 0.71$; $F(6, 124) = 3.87$; $P < .001$; ES = 0.21] yielded a significant effect for group indicating that groups TE, SSE, and NC differed on mean number of reexperiencing, avoidance, and hyperarousal symptoms experienced in relation to socially stressful events. To clarify the multivariate results, the MANOVA was followed by three ANOVAs, and significant univariate effects were followed by Tukey HSD post hoc comparisons (see Table 2). Groups SSE and TE did not differ, but both endorsed a greater mean number of avoidance and hyperarousal symptoms than did group NC. The group differences in avoidance and hyperarousal symptoms met Cohen's (1990) convention for a moderate effect. The differences among groups in reexperiencing symptoms were not significant in the univariate analysis.

2.1.2. Criterion A events

Patients in group SSE reported no Criterion A events and were excluded from these analyses. Among patients who reported any reexperiencing, avoidance, and hyperarousal symptoms associated with their respective traumatic event ($n = 25$), 96.00% ($n = 24$) reported experiencing such symptoms for more than 3 months and 4.00% ($n = 1$) reported experiencing such symptoms for 1 to 3 months. The MANOVA for reexperiencing, avoidance, and hyperarousal symptoms in connection with Criterion A events [Wilks' $\lambda = 0.73$; $F(3, 42) = 5.20$; $P < .01$; ES = 0.30] yielded a significant effect for group indicating that groups TE and NC differed on mean number of reexperiencing, avoidance, and hyperarousal

Table 2
Number of reexperiencing, avoidance, and hyperarousal symptoms associated with socially stressful events as a function of participant group

	TE ($n = 29$)	SSE ($n = 16$)	NC ($n = 21$)	F	ES
Reexperiencing symptoms				0.85	0.00
M	1.41	1.44	0.91		
S.D.	1.68	1.37	1.38		
Avoidance symptoms				8.17***	0.33
M	2.86[a]	2.94[a]	0.73[b]		
S.D.	2.33	2.27	1.42		
Hyperarousal symptoms				8.69***	0.34
M	2.03[a]	1.63[a]	0.23[b]		
S.D.	1.92	1.75	0.61		

Note. TE = patients who reported experiencing at least one Criterion A event; SSE = patients who reported experiencing exclusively socially stressful events; NC = normal controls; ES = effect size. Means in the same row that do not share the same superscript differ at $P < .05$ in the Tukey honestly significant difference post hoc comparison.
*** $P < .001$.

symptoms experienced in relation to Criterion A events. To clarify the multivariate results, the MANOVA was followed by three ANOVAs (see Table 3). Group TE endorsed a greater mean number of reexperiencing, avoidance, and hyperarousal symptoms than did group NC. The effect size for avoidance symptoms was large, and the effect sizes for reexperiencing and hyperarousal symptoms were moderate.

Table 3
Number of reexperiencing, avoidance, and hyperarousal symptoms associated with criterion a events as a function of participant group

	TE ($n = 29$)	NC ($n = 16$)	F	ES
Reexperiencing symptoms			6.24*	0.34
M	1.72	0.65		
S.D.	1.60	1.00		
Avoidance symptoms			13.73***	0.53
M	2.38	0.41		
S.D.	2.13	0.62		
Hyperarousal symptoms			4.48*	0.28
M	1.28	0.35		
S.D.	1.71	0.70		

Note. TE = patients who reported experiencing at least one Criterion A event; NC = normal controls; ES = effect size.
* $P < .05$.
*** $P < .001$.

2.2. Rates of a PTSD-like symptom pattern and PTSD

Rates of a PTSD-like symptom pattern and PTSD were derived from participants' PDS-revised responses (see Table 4). A PTSD-like symptom pattern was considered present when all the criteria for PTSD (with the exception of Criterion A) were met for each individual's worst reported socially stressful event. PTSD was considered present when all the criteria for PTSD (including Criterion A) were met for each individual's worst reported qualifying Criterion A event. For the PTSD-like symptom pattern, χ^2 tests were conducted comparing the proportions of this symptom pattern in groups TE, SSE, and NC. Groups differed significantly on proportions of this PTSD-like symptom pattern. In post hoc 2×2 χ^2 analyses, the proportions of patients with this symptom pattern in group TE (34.48%) and SSE (37.50%) did not differ [χ^2 ($df = 1$, $n = 45$) = 0.04, *ns*, ES = 0.03]. However, the percentage of participants with the PTSD-like symptom pattern in the combined patient group ($n = 16/45$; 35.56%) differed from that of group NC ($n = 0/21$; 0.00%) [χ^2 ($df = 1$, $n = 66$) = 10.28, $P < .001$, ES = 0.39]. With respect to PTSD, χ^2 analyses were calculated to examine the proportions of PTSD in groups TE and NC. The percentage of patients in group TE with PTSD differed moderately from that of group NC.[7]

2.3. Severity of social anxiety disorder and depression, and degree of life satisfaction

A MANOVA with group as the independent variable and self-report measures of social anxiety, depression, and life satisfaction as the dependent variables was calculated. The MANOVA yielded a significant effect for group [Wilks' $\lambda = 0.19$; $F(10, 120) = 15.37$; $P < .001$; ES = 0.46] indicating that the groups differed on social anxiety, depression, and life satisfaction. To clarify the multivariate results, the MANOVA was followed by five one-way ANOVAs, and significant univariate effects were followed by Tukey HSD post hoc comparisons (see Table 5). Groups SSE and TE did not differ on any measure, but both patient groups had higher scores on the SIAS, SPS, FQS, and BDI, and lower scores on the QOLI than did group NC. The effect sizes for these differences were large.

[7] The mean PDS-revised total symptom severity score for patients in the current study who met criteria for a PTSD-like symptom pattern ($M = 21.81$, S.D. = 8.51) was greater than the mean score of those who did not ($M = 6.21$, S.D. = 8.21) [$t(43) = -6.03$, $P < .001$, ES = 1.83]. Similarly, the mean PDS-revised total symptom severity score for patients in the current study who met criteria for PTSD ($M = 20.50$, S.D. = 9.56) was greater than the mean score of those who did not ($M = 5.38$, S.D. = 6.78) [$t(27) = -4.79$, $P < .001$, ES = 1.91]. The total severity means for patients who met criteria for either a PTSD-like symptom pattern or for PTSD were a little more than one standard deviation below those of a sample of persons who had experienced, witnessed, or been confronted with a high magnitude stressor at least 1 month prior and who met *DSM-III-R* PTSD criteria ($M = 33.59$, S.D. = 9.96); they were also a little less than one standard deviation above the mean for those who did not ($M = 12.54$, S.D. = 10.54; Foa et al., 1997).

Table 4
Rates of a PTSD-like symptom pattern and PTSD as a function of participant group

	TE ($n = 29$)	SSE ($n = 16$)	NC ($n = 21$)	χ^2	ES
Socially stressful events					
PTSD-like symptom pattern					
n	10	6	0		
%	34.48	37.50	0.00		
No PTSD-like symptom pattern					
n	19	10	21		
%	65.52	62.50	100.00	10.33**	0.39

	TE ($n = 29$)	NC ($n = 16$)	χ^2	ES
Criterion A events				
PTSD				
n	8	0		
%	27.59	0.00		
No PTSD				
n	21	16		
%	72.41	100.00	5.68*	0.32

Note. TE = patients who reported experiencing at least one Criterion A event; SSE = patients who reported experiencing exclusively socially stressful events; NC = normal controls; ES = effect size.
* $P < .05$.
** $P < .01$.

2.4. Relationship of type of event to reexperiencing, avoidance, and hyperarousal symptom severity

In order to determine whether patients with social anxiety disorder experienced socially stressful and Criterion A events differently, the number of symptoms experienced in connection with both socially stressful and Criterion A events were compared for patients who reported experiencing both classes of events (Group TE; $n = 29$). Patients endorsed significantly more hyperarousal symptoms in connection with socially stressful events than in connection with Criterion A events (SSE: $M = 2.03$, S.D. = 1.92; TE: $M = 1.28$, S.D. = 1.71; $t(28) = 2.26$, $P < .05$; ES = 0.41). There were no differences in patients' report of reexperiencing (SSE: $M = 1.41$, S.D. = 1.68; TE: $M = 1.72$, S.D. = 1.60; $t(28) = -1.30$, *ns*; ES = 0.19) or avoidance (SSE: $M = 2.86$, S.D. = 2.33; TE: $M = 2.38$, S.D. = 2.13; $t(28) = 1.26$, *ns*; ES = 0.21) symptoms in response to socially stressful versus Criterion A events.

2.5. Severity of social anxiety, depression, and quality of life in patients with and without a PTSD-like symptom pattern and PTSD

Social anxiety, depression, and quality of life scores for patients with and without a PTSD-like symptom pattern were compared. There were no differences

Table 5
Severity of social anxiety disorder and depression, and degree of life satisfaction as a function of participant group

	TE ($n = 29$)	SSE ($n = 16$)	NC ($n = 30$)	F	ES
Social Interaction Anxiety Scale				85.75***	1.12
M	52.04[a]	47.15[a]	10.96[b]		
S.D.	15.28	14.74	6.38		
Social Phobia Scale				86.47***	1.13
M	38.85[a]	35.38[a]	4.64[b]		
S.D.	13.69	11.23	3.97		
Fear Questionnaire-Social Subscale				45.62***	0.82
M	22.96[a]	22.46[a]	7.21[b]		
S.D.	6.98	7.10	5.95		
Beck Depression Inventory				30.62***	0.66
M	15.77[a]	16.31[a]	1.86[b]		
S.D.	9.63	8.81	2.26		
Quality of Life Inventory				27.44***	0.63
M	−0.50[a]	0.31[a]	2.04[b]		
S.D.	1.66	1.38	0.69		

Note. TE = patients who reported experiencing at least one Criterion A event; SSE = patients who reported experiencing exclusively socially stressful events; NC = normal controls; ES = effect size. Means in the same row that do not share the same superscript differ at $P < .05$ in the Tukey honestly significant difference post hoc comparison.
*** $P < .001$.

between groups on the SIAS [$t(39) = -1.46$, *ns*, ES = 0.48]; SPS [$t(39) = -0.70$, *ns*, ES = 0.23]; BDI [$t(38) = -1.53$, *ns*, ES = 0.49]; QOLI [$t(39) = 1.67$, *ns*, ES = 0.55]; or FQS [$t(43) = -2.19$, *ns*, ES = 0.67]. A similar comparison was conducted between patients with and without PDS-revised diagnoses of PTSD. There were no differences found between groups on any measure [SIAS: $t(25) = -0.69$, *ns*, ES = 0.29; SPS: $t(25) = -1.37$, *ns*, ES = 0.58; FQS: $t(27) = -1.39$, *ns*, ES = 0.57; BDI: $t(24) = -1.91$, *ns*, ES = 0.08; QOLI: $t(25) = 1.36$, *ns*, ES = 0.57].

3. Discussion

The current study examined the frequency of reexperiencing, avoidance and hyperarousal symptoms in connection with socially stressful events among persons with social anxiety disorder and nonanxious controls. It also explored whether the frequency of such symptoms differed between patients with social anxiety disorder who additionally reported experiencing a Criterion A event and those who did not.

More than one-fourth of persons with primary social anxiety disorder who had experienced a Criterion A event met criteria for comorbid PTSD. Relative to the

control group, the experience of a Criterion A event among patients was associated with greater reexperiencing, avoidance, and hyperarousal in connection with that event. However, compared with patients without comorbid PTSD, those with comorbid PTSD did not experience greater symptoms of social anxiety or depression or more diminished life satisfaction. Similarly, patients with a history of a Criterion A event did not differ from patients without such a history on reexperiencing, avoidance, and hyperarousal reported in connection with socially stressful events. Thus, patients with social anxiety disorder may demonstrate reexperiencing, avoidance, and hyperarousal symptoms associated with a socially stressful event at intensities sufficient to complicate the processing of such events, and this pattern appears to be independent of a history of a Criterion A event.

Unlike control participants, patients reported reacting to memories of past socially stressful events with hyperarousal and avoidance symptoms. Previous studies demonstrate that exposure to social interactions or public speaking situations is associated with elevated heart rate (e.g., Öst, Jerremalm, & Johansson, 1981) and systolic blood pressure (e.g., Turner, Beidel, & Larkin, 1986). However, hyperarousal symptoms, as defined by PTSD Criterion D (sleep difficulties, irritability, concentration difficulties, hypervigilance, and exaggerated startle response) are more pervasive and carry the potential of greater impairment than situationally bound sympathetic arousal experienced in the context of a present-day feared social situation. Hyperarousal coupled with cognitive and emotional avoidance (as described by *DSM-IV* PTSD criteria, i.e., avoidance of thoughts and images, emotional numbing) in response to a memory of a specific stressful social event suggest that memories of past events may be just as salient as present and future social or performance situations for persons with social anxiety disorder. In addition, the response of individuals with social anxiety disorder to past negative social situations may be stronger and more complex than previously known and may play a prominent role in the maintenance of the disorder.

There were no group differences with respect to mean number of reexperiencing symptoms. Actual differences may not have been illuminated due to restricted range—recall that reexperiencing is considered present with the endorsement of only one symptom—or due to an inability of the assessment instruments to capture the nature of reexperiencing relevant to socially stressful events. Nonetheless, patients in the current study endorsed a mean number of reexperiencing symptoms in response to memories of socially stressful events greater than that required for PTSD diagnosis according to the *DSM-IV* algorithm. These findings are consistent with the findings of Hackmann, Surawy, and Clark (1998); Hackmann et al. (2000) and Wells et al. (1998) that individuals with social anxiety disorder report experiencing shifts from field to observer perspectives when reminded of anxiety-provoking social situations. Reexperiencing symptoms among individuals with social anxiety disorder may be distorted recollections of the past event, potentially contributing to distorted beliefs and interfering with the processing of socially stressful events.

More than one-third of patients with social anxiety disorder in the current study met criteria for a PTSD-like symptom pattern in connection with a stressful social event. The salience of socially stressful events may be gleaned by comparing reactions to these events with reactions to Criterion A events. The 29 patients in group TE (who reported experiencing both socially stressful and Criterion A events) reported similar numbers of reexperiencing and avoidance symptoms but greater numbers of hyperarousal symptoms for their worst socially stressful event compared with their worst Criterion A event. Of these 29 patients, four (13.79%) met PTSD Criteria B through F for their worst socially stressful events and not for their worst Criterion A events. Three of the four patients reported that their worst socially stressful event involved being verbally teased or ridiculed by peers or strangers; one patient reported that her worst socially stressful event involved being criticized about an aspect of her physical appearance. Comparatively, three of the four patients reported that their worst Criterion A event involved witnessing a life-threatening illness and death; one patient reported that her worst Criterion A event involved repeated sexual assault. Remarkably, these patients reported experiencing greater difficultly in connection with stressful social events than in connection with clearly more severe traumatic events.

There are no studies to date that have investigated how persons who have experienced socially stressful life events and resultant reexperiencing, avoidance, and hyperarousal symptoms respond to cognitive–behavioral treatments for social anxiety disorder or whether modifications in current treatment protocols are warranted for such individuals. To the extent that a PTSD-like symptom pattern subsequent to socially stressful events develops and is maintained in a way that is similar to PTSD, then the cognitive–behavioral treatment components effective for PTSD may be important. Effective treatment for persons with PTSD includes both exposure to the traumatic memory such that it is accessed and contained (Foa, Molnar, & Cashman, 1995) and introduction of corrective information (e.g., Foa & Kozak, 1986; Keane, Fairbank, Caddell, & Zimering, 1989; Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998). Cognitive–behavioral treatments for social anxiety disorder focus predominantly on exposure to current and upcoming anxiety-provoking social and performance situations and modification of associated symptoms, cognitions, and behavior. Exposure to current situations that trigger symptoms associated with past stressful social events may not be adequate since it may not access all the components of the fear memory. When relevant, emotional processing of memories associated with past stressful social events may improve response to treatment of social anxiety disorder. Identification of patients for such studies may require the administration of instruments designed specifically for the assessment of PTSD Criteria B through F—self-report measures of social anxiety, depression, quality of life, and fear-motivated avoidance of social situations did not differentiate patients who exhibited a PTSD-like symptom pattern from those who did not.

There are several limitations of the current investigation. First, the current investigation conceptualized participants' reactions to socially stressful events

using PTSD language and nosology. The use of PTSD as a framework for examining participants' responses to socially stressful events seems appropriate since it provides a standardized way of assessing the presence of a stimulus, a response, and psychological sequelae. However, it is acknowledged that the use of PTSD language may communicate to the reader an emphasis on the stimulus and a de-emphasis on the response.

Second, although the control group and the two patient groups were similar demographically, there were group differences in race and marital status. Analyses including race as an independent factor but otherwise parallel to the analyses summarized herein were performed. No main effects of race and no interactions of participant group with race were evidenced, and the effect sizes in these analyses were small. Similarly, when sample sizes permitted, analyses of the impact of marital status on study variables were performed. No main effects of marital status were evidenced, and the effect sizes for these analyses were small. Nonetheless, the unequal distribution of race and marital status among the participant groups potentially limits the generalizability of the current findings, and conclusions that can be drawn from any results involving marital status are limited.

Third, the sample sizes were small relative to the number of analyses conducted. Fourth, all reports of socially stressful and Criterion A events were retrospective and self-report. The consensus team described previously was established to address this limitation. However, it was not possible to independently confirm reported events. Although this limitation is shared by studies of persons from any population who have difficulties resulting from a past event, such as studies of persons with chronic PTSD, it should not be underestimated. In addition, the assessment procedures employed in the current investigation preclude more accurate conclusions regarding event length and severity, as well as life events occurring around the time of the socially stressful event. A related limitation is that reports of socially stressful and Criterion A events were collected using a revised version of the PDS for which no reliability or validity data are available.

Finally, compared with the severity of traumatic symptoms endorsed on the PDS by persons who had reported a high magnitude stressor at least 1 month prior and who met *DSM-III-R* criteria for PTSD (Foa et al., 1997), the severity of traumatic symptoms in the current sample was modest. At least three factors may have contributed to this discrepancy. First, the participants in the study conducted by Foa and co-workers all met criteria for PTSD whereas most participants in the current investigation did not. Second, a number of the participants in the Foa and co-workers study had experienced the traumatic event more recently than was the case for the participants in the current study. Third, the two studies employed different definitions of a traumatic event. Foa and co-workers relied on the stringent *DSM-III-R* Criterion A requirement of the experience of ''an event that is outside the range of usual human experience and that would be markedly distressing to almost anyone ...'' (American Psychiatric Association, 1987, p.

250). The current investigation employed the arguably more inclusive *DSM-IV* Criterion A requiring the person to have "experienced, witnessed, or (be) confronted with an event ... that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others, ... (and to respond with) intense fear, helplessness, or horror" (American Psychiatric Association, 1994, pp. 427–428). Thus, it is likely that the current sample represented a less severely traumatized population than the sample described by Foa and co-workers.

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