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Influence of expressed emotion and perceived criticism on cognitive-behavioral therapy for social phobia

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Abstract

This study examined significant others' expressed emotion (EE) and a closely related construct, perceived criticism, as predictors of cognitive-behavioral therapy outcome in a sample of 40 patients with social phobia (social anxiety disorder). Patients enrolled in group therapy for social phobia completed pre- and post-treatment questionnaire measures of perceived criticism and anxious and depressive symptoms. Designated significant others were assessed for the components of high EE (criticism, hostility and emotional overinvolvement) using the Camberwell Family Interview. It was hypothesized that these high-EE components and patients' perceived criticism would be associated with poorer treatment outcome, and results ran counter to these expectations. Controlling for initial social phobia severity, lower levels of perceived criticism predicted treatment dropout. There was also a nonsignificant trend for participants with a significant other rated as high in emotional overinvolvement to show less change on a composite symptom measure. Findings from this study suggest that close relationships impact the outcome of cognitive-behavioral interventions for social phobia.

Keywords: Social phobia; Social anxiety; Expressed emotion; Perceived criticism; Cognitive-behavioral therapy; Family factors

Introduction

Social phobia (SP), also known as social anxiety disorder, is a "marked and persistent fear of social or performance situations in which embarrassment may occur" (American Psychological Association (APA), 2000, p. 450). A critical feature of the disorder is that fear leads to the avoidance of social or performance situations, or else these situations are endured with intense anxiety and distress (APA, 2000, p. 456). Summarizing the findings of the best known epidemiological studies of mental disorders, the *DSM-IV* reported lifetime prevalence rates for SP ranging from 3% to 13% in the general population, although a recent re-analysis of these data suggests a rate of 3.7% for clinically significant SP (Narrows, Rae, Robins, & Regier,

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2002). SP is associated with social and occupational dysfunction (Katzelnick & Greist, 2001) and frequent comorbidity with mood, anxiety, and substance abuse disorders (Perugi, Frare, Toni, Mata, & Akiskal, 2001). In conjunction with comorbid depression, SP may also be associated with increased risk for attempting suicide (Stein et al., 2001).

Cognitive-behavioral therapy (CBT; Heimberg, 2001) has the most empirical support of any treatments for SP. Gould and Johnson (2001) aggregated data from three methodologically rigorous meta-analyses of treatments for SP and found effect sizes for CBT ranging from .74 to 1.06, with maximum effect sizes obtained from treatments with a behavioral exposure component, either alone or in combination with cognitive restructuring.

Despite CBT's proven efficacy, patients frequently drop out of treatment and not all improve. Gould and Johnson's meta-analysis found that cognitive therapy plus exposure, despite its effect size (ES = 1.06), had one of the highest dropout rates of the surveyed treatment modalities (18% vs. $M = 14\%$ for other modalities). With any treatment, it is crucial to know who will benefit from it, who will not, and why. Variables that have been tested as potential predictors of CBT outcome for SP include indicators of greater clinical severity, such as comorbid depression (Chambless, Tran, & Glass, 1997; Scholing & Emmelkamp, 1999), the generalized subtype of SP (in contrast to the situation-specific subtype)[3] or avoidant personality disorder (e.g., Brown, Heimberg, & Juster, 1995), or indicators of the patient's investment in treatment, such as lower treatment expectancy or poorer homework compliance (for review, see Hofmann, 2000; Hofmann & Barlow, 2002).

Whereas the majority of studies have tested patient- and treatment-specific variables, Alden, Taylor, Mellings, and Laposa (2003) surveyed 35 patients with generalized SP and found that patients who recalled their parents as rejecting and lacking in affection had significantly worse CBT outcome than patients who recalled their parents as either overprotective or as providing limited opportunities to socialize. This link between social-developmental history and treatment outcome is an important one given that patients with SP were significantly more likely than nonclinical control participants to recall their parents as having isolated them socially and as "placing undue importance on the opinions of others and as using shame as a means of discipline" (Bruch & Heimberg, 1994, Abstract, p. 155). There is at least cross-sectional support for these characterizations in that socially anxious children and adolescents make very similar contemporaneous observations about how their parents treat them (Boegels, van Oosten, Muris, & Smulders, 2001; Caster, Inderbitzen, & Hope, 1999). Further, one observational study suggests that the interactions of socially anxious children and their parents, compared to those of nonanxious children and their parents, are marked by fewer verbalizations, less positive feedback, and more negative feedback (Hummel & Gross, 2001).

Such childrearing practices as isolation from social events and using shame as a means of discipline resonate with the construct of high expressed emotion (EE). EE is an index of significant others' attitudes, feelings, and behavior toward an identified patient that has been shown to predict psychiatric relapse and re-hospitalization across a wide range of chronic mental disorders, including schizophrenia, major depression, and bipolar disorder (Butzlaff & Hooley, 1998). EE was originally conceptualized as a dichotomous summary index. A family member was rated low or high on how much criticism, hostility, and emotional overinvolvement (EOI) s/he expressed toward an identified patient during an audiotaped semistructured interview: the Camberwell Family Interview (CFI) (Vaughn & Leff, 1976a). "High EE" refers to above-threshold levels of criticism, hostility, and EOI, although confirmatory factor analyses suggest that EE is best represented by three factors: criticism (which is often highly correlated with hostility), EOI, and positivity (encompassing warmth and positive comments) (Chambless, Steketee, Bryan, Aiken, & Hooley, 1999).

Although the patient is not present during the CFI, laboratory studies suggest that EE rated during the interview captures what occurs during everyday interactions. In these studies, patients with schizophrenia engaged in escalating, reciprocally negative interaction patterns with relatives rated high in criticism (Hahlweg et al., 1989; Strachan, Feingold, Goldstein, Miklowitz, & Nuechterlein, 1989). Over time, researchers have

[3]People with SP have commonly been categorized into two subtypes: those who fear a wide range of social situations (generalized) and those who fear a limited number of situations, typically public speaking ("performance" or nongeneralized). Compared to nongeneralized SP, the generalized subtype is associated with earlier onset, more severe impairment, and a more chronic course (Heckelman & Schneier, 1995).

increasingly studied EE as a multifaceted construct with both negative and positive aspects and explored the differential effects of the CFI's five subscales (criticism, hostility, EOI, warmth, and positive comments) on outcome in a wide range of psychiatric and medical conditions (see Wearden, Tarrier, Barrowclough, Zastowny, & Rahill, 2000).

Research on EE in schizophrenia and depression consistently finds criticism to be the main predictor of relapse and rehospitalization (Butzlaff & Hooley, 1998). The effects of EE on short-term treatment outcome have recently been studied in such anxiety disorders as posttraumatic stress disorder (PTSD; Tarrier, Sommerfield, & Pilgrim, 1999), panic disorder with agoraphobia (PDA; Chambless & Steketee, 1999; Peter & Hand, 1988) and obsessive-compulsive disorder (OCD; Chambless & Steketee, 1999) but have not yet been studied in SP. Tarrier et al. (1999) found that high levels of criticism predicted nearly 20% of the variance in pre/-post-treatment difference scores for patients receiving either cognitive therapy or imaginal exposure therapy for PTSD. In a study of behavior therapy for PDA and OCD, Chambless and Steketee (1999) found that more EOI and hostility predicted more treatment dropout, and greater hostility was related to poorer outcomes on target ratings. However, high levels of criticism without hostility predicted better outcome. Peter and Hand (1988) noted a similar, apparently beneficial effect of nonhostile criticism. Such findings suggest that the effects of EE may be disorder-specific, as suggested by a number of authors (e.g., Asarnow, Tompson, Woo, & Cantwell, 2001; Stubbe, Zahner, Goldstein, & Leckman, 1993), and perhaps even for disorders within the same diagnostic category (in this case, anxiety disorders).

The EE construct may be relevant to CBT treatment for SP for two reasons. First, people with SP tend to associate with a select group of people with whom they feel safe, and they are therefore likely to have prolonged periods of contact with a restricted number of people, perhaps especially family members. If SP symptoms are influenced by interactions with low- and high-EE significant others, these highly dependent relationships present potentially daily opportunities for these dynamics to occur. Second, because SP is associated with acute sensitivity to embarrassment and shame, people with the disorder may be particularly vulnerable to the effects of criticism and hostility. Clark (1997) theorized that SP is perpetuated by avoidance of feared social situations, with the resultant loss of opportunity to learn that one can function in those situations despite anxiety. Thus, prolonged contact with a high-EE relative who criticizes efforts at participation in social activities or whose emotional overinvolvement enables avoidant behavior, may undermine the efficacy of CBT.

Because the CFI requires lengthy coding, briefer measures of EE variables have been developed with a particular focus on retaining the CFI's prediction of psychiatric relapse and rehospitalization. Of these, the Perceived Criticism Scale (PCS; Hooley & Teasdale, 1989) has proven predictive validity for patients with major depression (Hooley & Teasdale, 1989), PDA, and OCD (Chambless & Steketee, 1999). Chambless and colleagues' (Chambless, Steketee, Bryan, Aiken, & Hooley, 1999) confirmatory factor analysis also demonstrated that the PCS is a strong indicator of the latent variable Criticism in their three-factor model of EE ($\beta = .49$, $p < .01$). On the PCS, patients rate on a 10-point scale how critical they believe their relatives are of them. Scores above 6 consistently predicted relapse and rehospitalization for depressed patients (Hooley & Teasdale, 1989). Chambless and Steketee (1999) found that higher levels of continuously measured perceived criticism predicted worse treatment response in PDA and OCD, whereas objective criticism, as rated from the CFI, produced mixed results. Given the heightened sensitivity to negative evaluation among people with SP, there is reason to hypothesize that greater perceptions of criticism would adversely affect treatment outcome.

This study examined significant others' EE ratings and patients' perceived criticism as predictors of treatment outcome in SP. We hypothesized that higher levels of perceived criticism and/or one or more of the components of high-EE (criticism, EOI, and hostility) would be significantly associated with poor treatment outcome and high rates of dropout from treatment. We expected CFI-rated criticism to have a significant influence on treatment outcome in SP, but our stance on its *direction* of influence was exploratory. Although the majority of studies have found criticism to be a predictor of poor outcome, studies of its effects on treatment outcome in the anxiety disorders have produced more varied results. As noted above, CFI-rated criticism predicted poorer imaginal exposure therapy outcome in PTSD (Tarrier et al., 1999) but predicted better treatment outcome in PDA and OCD (Chambless & Steketee, 1999). Comorbid depression was examined as a moderator of the effects of EE on treatment outcome for two reasons. First, depressive

symptoms have predicted worse CBT treatment outcome for SP patients in previous studies (Chambless et al., 1997; Scholing & Emmelkamp, 1999). Second, there is an established relationship between EE and clinical outcome in depression that needs to be accounted for when assessing EE's potential effect on treatment for SP, and especially if SP is comorbid with depression (Hooley, Orley, & Teasdale, 1986; Vaughn & Leff, 1976b).

Method

Design

Forty participants with moderate social phobia were recruited to participate in group therapy at the Center for Anxiety and Related Disorders (CARD) at Boston University. Inclusion criteria were age 18–64, current diagnosis of SP as the primary reason for seeking treatment, and English-speaking and English-literate. Exclusion criteria were prior nonresponse to an adequately delivered CBT treatment for SP; gross evidence of cognitive impairment during the psychodiagnostic interview; or current diagnosis of any of the following conditions on the Lifetime Version of the Anxiety Disorders Interview Schedule for *DSM-IV* (*ADIS-IV-L*, Brown, DiNardo, & Barlow, 1994): psychoactive substance abuse or dependence, current active suicidal potential, bipolar disorder, schizophrenia, or other psychotic disorder.

All SP patients were enrolled in the soonest available group treatments using one of two types of CBT. They were recruited by mail and during their first group therapy session. Group members were asked to consent to complete self-report measures of demographics, symptoms, and perceived criticism at pre- and post-treatment and to designate a significant other to be invited for an interview with the first author (JMF). Preference was given to spouses, family members, or friends who lived with the patient, followed by significant others who had at least weekly face-to-face or telephone contact with the patient. Significant others who were English-speaking and English-literate could give informed consent and be interviewed either over the telephone or at the clinic. Of 40 significant others, 29 participated by telephone, 9 came to the clinic, and 2 declined to participate.

Group treatment

All treatments were conducted in a group format with 4–6 participants per group and two experienced co-therapists. The groups met weekly and for 2.5 h each time. Because the treatments were part of a comparative treatment study to examine mediators of treatment change, participants received either one of two cognitive-behavioral interventions that differed in their hypothesized mechanism of action (see Hofmann, 2004). The two interventions were Cognitive-Behavioral Group Therapy (CBGT; Heimberg & Becker, 2002; Hope & Heimberg, 1993) and Exposure Group Therapy (EGT; Hofmann, 2003). Thirty participants were assigned to CBGT, and 10 were assigned to EGT.

CBGT emphasized cognitive restructuring skills to identify, challenge, and re-formulate automatic thoughts that perpetuate social anxiety. Cognitive restructuring skills were practiced during behavioral exposure exercises that simulate the social situations in which group members experienced difficulty. Group members progressed gradually through these exercises, starting with situations they found relatively less difficult and moving toward more challenging situations in later sessions and between-session homework. The goal was for clients to develop the capacity to process cognitive, observational, and emotional data that disconfirmed, or at least provided more realistic alternatives, to their socially anxious schema.

EGT also focused on effecting changes in clients' socially phobic schema but through behavioral and self-observational pathways rather than through the direct challenging of automatic thoughts. For example, clients were taught that anxiety stems from their exaggerating the social costs of looking anxious or not performing perfectly and then taught to view themselves in a more realistic light by performing a series of videotaped speeches and comparing their impressions of how they performed to the objective evidence provided by the videotapes. EGT and CBGT were equivalent in their efficacy (Cohen's $d = .91$ for CBGT and .81 for EGT) (Hofmann, 2004; Hofmann, Moscovitch, Kim, & Taylor, 2004).

Participants

Participants were 23 men and 17 women who ranged in age from 18 to 58 years, with a mean age of 32.4. The majority was Caucasian (77.5%), employed (57.5%), and had a Bachelor's degree or higher level of education (82.5%). Over one-third of the sample was students (37.5%).

The 38 significant others ranged in age from 19 to 61 years, with a mean age of 38.5. They were categorized as follows: 14 spouses (6 spouses, 8 committed unmarried partners), 14 family members (9 parents, 5 siblings), and 10 friends (6 friends, 4 current friends/former dating partners). The two significant others who declined to participate were long-distance friends who had infrequent contact with the participants.

Measures

Trained doctoral students or doctoral psychologists assigned diagnoses to participants using the *ADIS-IV-L*, a semi-structured interview that assesses anxiety disorders and screens for psychosis, somatoform disorders, mood disorders, and substance abuse. Clinicians assigned a clinical severity rating (CSR) to each diagnosis. Diagnoses assigned a CSR of 4 or above (on a 0–8 scale) were considered to be clinically significant. Brown and colleagues found kappas for the following disorders: social phobia (.73), major depression (.68), dysthymia (.36), co-occurring major depression and dysthymia (.69) (Brown, DiNardo, Lehman, & Campbell, 2001). As part of standard clinic procedure, raters presented their assessment cases during weekly staffing meetings, and SP subtype was assigned based on consensus between raters and senior clinicians about the breadth of social situations endorsed as clinically distressing and impairing during the *ADIS-IV-L*.

Depressive symptoms were assessed using the 21-item Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the depression subscale of the 42-item Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995). Each item of the BDI asks respondents to endorse one of four statements, graded in severity from 0–3, that best describes how s/he has been feeling in the past week. The DASS's items ask respondents to rate from 0 (''did not apply to me at all'') to 3 (''applied to me very much or most of the time'') the degree to which they experienced events associated with depression, physiological anxiety, or stress-related tension and irritation over the last week. Both the BDI (Beck, Steer, & Garbin, 1988) and the DASS (Brown, Chorpita, Korotitsch, & Barlow, 1997) have been found to have excellent psychometric properties. Further, a recent study by Coles, Gibb, and Heimberg (2001) found that the BDI had good convergent validity with measures of depression and divergent validity with measures of social anxiety and other anxiety symptoms in a sample of 113 adults with a principal diagnosis of SP, with or without a comorbid depressive disorder.

SP symptoms were assessed with three well-established self-report instruments: the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987); the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998); and the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989). Each measure employs a Likert-scale metric to assess how much anxiety is experienced across a wide range of common social situations. The LSAS measures self-reported fear and avoidance across 24 types of social (e.g., going to a party) and performance (e.g., writing while being observed) situations. The SIAS is a 20-item measure that similarly focuses on two scenarios commonly feared by patients with social anxiety: the fear of initiating and maintaining conversation and the fear of being observed and scrutinized by others. The 45-item SPAI more broadly assesses the respondent's level of distress and impairment due to the key features of social phobia (somatic symptoms, thoughts, and avoidance and escape behaviors) across a range of social situations.

The CFI (Vaughn & Leff, 1976a) is an audiotaped, semi-structured interview designed to elicit narrative responses that are rated for EE. The CFI covers a wide range of topics, from the respondent's subjective impression of ''when [the patient's] troubles first began'' (CFI, question 1); to the patient's daily habits (including how much time in a typical week the respondent and patient spend together); to the patient's symptoms and their effect on the family; to the patient's ability to manage work and household chores; to the respondent's feelings about how s/he ''gets along'' with the patient (including enjoyment of company and shared activities); and finally to the respondent's prediction about the patient's prognosis. The CFI used in this study was adapted from an earlier modification by Tarrier (1996) for PTSD. The CFI has 5 subscales: Critical comments (frequency count); hostility (0–3 scale); emotional overinvolvement (EOI; 0–5 scale); warmth

(0–5 scale), and positive comments (frequency count). As described by Leff and Vaughn (1985): Criticism is coded when the respondent explicitly states (or implies through harsh vocal tone or sarcasm) dislike or disapproval of the patient's behavior; hostility is coded when criticisms are globally directed at the patient as a person or when the respondent expresses rejection of the patient; EOI is coded when the respondent endorses overprotective behavior toward the patient, ruminates excessively about the distant past (usually when the patient was a child with "great potential" prior to becoming ill), or expresses heightened affect in the form of crying, anxious vocal tone, or exaggerated praise; warmth is coded based on vocal tone and the respondent's expressing enjoyment of the patient's company; and positive comments are coded for praise of the patient's behavior or attributes.

In this study, CFI-assessed EE was examined using traditional cutoff scores for criticism, hostility, and EOI (Leff & Vaughn, 1985) and dimensionally based on previous work (Chambless & Steketee, 1999; Gottschalk & Keatinge, 1993).[4] The CFI was rated by the first author (JF), who was trained by one of its developers. Intraclass correlations for a training sample of 10 CFI's were as follows: .73 for critical comments, .83 for hostility, .82 for EOI, and .85 for summary EE. All EE ratings were made blind to participants' post-treatment data.

The PCS (Hooley & Teasdale, 1989) consists of two 10-point Likert scales asking the respondent to rate how critical ("not at all" to "extremely") his/her designated significant other is towards him or her and how sensitive or upset ("not at all" to "extremely") the respondent is to the criticism. Van Humbeeck, Van Audenhove, De Hert, Pieters, and Storms (2002) review of EE assessment instruments found the PCS to have strong test–retest reliability ($r = .75$), concurrent validity ($r = .51$ with CFI cutoff score) and predictive validity ($r = .64$ for cutoff score of 6). In this study, the Perceived Criticism and Perceived Sensitivity to Criticism scales were highly correlated ($r = .65$), and the PCS was therefore chosen for statistical analyses according to the conventions of EE-research.

Data management

Data are presented for 38 participants with complete pre- and post-treatment data and their key significant others. Of the original 40, two significant others declined to participate in this study, and the SP patients who designated them were lost to follow up.

Data reduction strategy

To limit the number of statistical comparisons, avoid multicollinearity among symptom measures, and produce a normally distributed variable suitable for parametric analysis (see Steketee & Chambless, 1992), a single composite SP change score was created. Pre–post difference scores for all SP symptom measures were calculated and correlated; differences scores with Pearson's r's between .50 and .80 were standardized and summed using SPSS 11.0. The difference scores that met these criteria were ΔSPAI social phobia subscale, ΔLSAS fear subscale, and Δtotal SIAS. The same rationale and procedure was followed to composite the measures of depressive symptoms (CSR, DASS-D, and BDI; see Table 1).

Analytic strategy

The influence of EE and perceived criticism on whether a participant completed or dropped out of treatment was assessed through logistic regression. The influence of these EE-related variables on change in participants' target symptom measures was assessed through hierarchical linear regression. Following Chambless and Steketee (1999), predictor variables were first regressed separately onto the composite SP difference score and if found to be significant predictors, they were then included in a summary hierarchical linear regression.

[4]The EE-literature has gradually shifted from exploring the EE-variables as dichotomized indicators to continuous variables, as recommended by Gottschalk and Keatinge (1993). Interestingly, however, no study to date has empirically considered the question of whether dichotomous or continuous EE indicators are more appropriate or more "accurately" reflect EE-related phenomena.

Table 1
Descriptive statistics and intercorrelations between pre-/post-treatment difference scores for SP measures and measures of depressive symptoms ($N = 38$)

Measure	CSR of SP	ΔSPAI		ΔSIAS Total	ΔLSAS		Mean (SD)
		Social	Total		Fear	Avoid	
CSR of SP	1.00						5.98 (.92)
ΔSPAI social	−.10						26.00 (28.74)
ΔSPAI total	−.07	.94**					31.79 (32.99)
ΔSIAS total	.01	.72**	.66**				14.34 (11.17)
ΔLSAS fear	−.19	.82**	.78**	.80**			9.24 (9.47)
ΔLSAS avoid	−.03	.74**	.72**	.59**	.79**		10.16 (11.17)
DASS-D	.40*	−.18	−.11	−.06	−.20	.05	9.65 (7.57)
BDI	.29	.03	.12	0.00	−.01	.16	10.98 (8.25)
CSR of comorbid depression	.32*	.06	.09	−.06	−.07	.14	1.70 (2.17)
	DASS-D ($N = 40$)	BDI ($N = 40$)	CSR of comorbid depression ($N = 40$)				
BDI	.77**						
CSR of comorbid depression	.65**	.59**	1.00				

ΔSPAI, pre-/post-treatment difference score for Social Phobia and Anxiety Inventory (social anxiety and total scores); ΔSIAS, pre-/post-treatment difference score for Social Interaction Anxiety Scale; ΔLSAS, pre-/post-treatment difference score for Liebowitz Social Anxiety Scale (fear and avoidance subscales); DASS-D, Depression Anxiety Stress Scales-depression subscale; BDI, Beck Depression Inventory; CSR, Clinical Severity Rating from Anxiety Disorders Interview Schedule for DSM-IV.
*$p < .05$; **$p < .01$.

Because CFI-hostility was strongly negatively skewed (over 60% of significant others were rated zero), it was dummy-coded as present or absent for the regression analyses. Square root transformations were applied to EOI, critical comments, and positive comments to normalize their distributions, and an additional dummy-coded high/low EOI ($\geqslant 3$) variable was created to test it as a categorical variable based on the traditional CFI-cutoff scores.

Results

Psychiatric diagnoses of SP group members

Based on results from the *ADIS-IV-L*, 10 group members met diagnostic criteria for nongeneralized SP, and 30 for the generalized subtype. The most frequently diagnosed comorbid conditions were major depressive disorder ($n = 7$, 17.5%), generalized anxiety disorder ($n = 7$, 17.5%), dysthymia ($n = 5$, 12.5%), dysthymia with history of major depressive episodes ($n = 3$, 7.5%), panic disorder with agoraphobia ($n = 2$, 5.0%), and specific phobia ($n = 2$, 5.0%). Another 10% had a history of alcohol or substance dependence ($n = 4$). The SP subtypes did not significantly differ in their distributions of participants with and without comorbid diagnoses (Fisher's exact test (1) = .42), although only the generalized SP subgroup had comorbid depressive disorders ($n = 16$, 40%). Mean SP clinical severity rating for the whole sample was 5.98 (SD = .92). Interestingly, SP clinical severity rating (CSR) was not significantly correlated with SP symptom measures (r's = −.03 to −.19, ns) but was significantly correlated with the DASS depression subscale ($r = .40$, $p < .05$) and CSR for depressive disorders ($r = .32$, $p < .05$).

Statistical assumptions

The study was adequately powered to test the effects of four predictors (CFI-rated criticism and EOI, perceived criticism, and a composite measure of comorbid depression) on a composite measure of SP symptom change from pre- to post-treatment (Cohen, 1992). Whenever histogram analyses and skewness and kurtosis

Table 2
Pre-treatment, post-treatment, pre-/post-treatment difference scores, and effect sizes for SP group members' target measures

Measure	Pre-treatment score ($N = 38$)[a]		Post-treatment score ($N = 38$)[a]		Effect size[b]
	M	SD	*M*	SD	
SPAI social	127.13	26.16	101.13	31.21	.99**
SPAI total	149.11	33.79	117.32	40.38	.94**
SIAS total	45.61	10.73	31.26	9.90	1.34**
LSAS fear	40.78	9.47	31.55	10.20	.97**
LSAS avoid	35.66	10.00	25.50	10.18	1.02**

Note: SPAI, Social Phobia and Anxiety Inventory (social anxiety subscale and total score); SIAS, Social Interaction Anxiety Scale (total score); LSAS, Liebowitz Social Anxiety Scale (fear and avoidance subscales).
**Paired sample *t*-tests ($df = 37$) were statistically significant ($p < .001$).
[a]Two group members were lost to follow-up after dropping out of treatment; data are presented only for participants with complete pre- and post-treatment data.
[b]Effect size was computed using the formula $M_{\text{pretest}} - M_{\text{post-test}}/\text{SD}_{\text{pretest}}$.

statistics indicated nonnormal distribution of variables (CFI-critical and positive comments), they were transformed using the square root function in SPSS 11.0.

Results of treatment

Eleven group members (27.5%) dropped out of treatment before completing 10 treatment sessions; 4 attended 3–6 sessions, and 7 attended 8–9 sessions. Nine of the dropouts were assigned to receive CBGT, and two were assigned to receive EGT; this difference was not found to be statistically significant (Fisher's exact test = .70). Two of these later dropouts, both assigned to CBGT, were lost to follow-up. Hence, 38 of the 40 participants, including nine of the eleven dropouts, were retained for post-treatment assessment. Cells were too small to compare early and late dropouts statistically. The dropouts' average CSR of 6.5 (SD = .90) was significantly higher than that observed in the treatment completers ($M = 5.8$, SD = .90, $t(38) = -2.1$, $p < .05$).

Table 2 shows the pre-treatment, post-treatment, pre-/post-treatment difference scores, and effect sizes for the social anxiety symptom measures.[5] The average effect size of 1.05 was comparable to Gould and Johnson's (2001) figure of 1.06 for treatments with a behavioral exposure component. Independent samples *t*-tests indicated that completers and dropouts did not significantly differ on their pre-treatment, post-treatment, or difference scores. Along similar lines, a MANCOVA analysis indicated that there were no significant differences between the CBGT and EGT groups on pre- and post-treatment scores on the SPAI-social scale ($F_{2,\ 37} = 0.07$, n.s.), and depression did not significantly contribute to the model when entered as a covariate ($F = 0.12$, n.s.).

Expressed emotion

Significant others' EE was rated according to the traditional Camberwell rating system, using scores of 6 critical comments, 1 or greater on the 4-point hostility scale, and 3 or greater on the EOI scale to determine high EE (see Table 3). The rate of high EE in this sample was compared to rates found in other anxiety disorders. Twenty-two significant others were rated as high-EE (57.9%). This rate was comparable to high EE rates in samples of patients with anxiety disorders reported by Chambless and Steketee (1999, 55%) and Tarrier (1996, 52%). The rate of hostility observed in this sample (36.8%) was comparable to rates observed by Tarrier (35.5%) and Chambless and Steketee (33%). The rate of EOI observed in this sample (28.9%) was comparable to the rate observed by Tarrier (26%) and higher than the rate observed by Chambless and Steketee (12%), perhaps due to a higher proportion of first-degree relatives in the present study (35% compared to Tarrier's 23% and Chambless & Steketee's 27%).

[5]Effect sizes were computed using the formula $M_{\text{pretest}} - M_{\text{post-test}}/\text{SD}_{\text{pretest}}$.

Table 3
Distribution of significant others' expressed emotion ($N = 38$)

EE variable	Low EE significant others ($n = 16$)	High EE significant others ($n = 22$)
Number of critical comments (*M,* SD)[a]	2.19 (2.07)	10.00 (5.64)**
Critical comments $\geqslant 6$[b] (*n*, %)	N/A	18 (47.4%)
Emotional overinvolvement (EOI; *M*, SD)	0.56 (0.73)	2.27 (1.49)
EOI $\geqslant 3$ (*n*, %)[c]	N/A	11 (28.9%)
Hostility $\geqslant 1$ (*n*, %)[c]	N/A	14 (36.8%)
Warmth (*M,* SD)	3.25 (1.34)	2.45 (1.37)
Positive comments (*M,* SD)	5.69 (4.76)	5.05 (5.70)

** $t(28) = -5.97$, $p < .001$, reduced *df* used due to a significant Levene's test ($p = .001$).
[a]The mean number of critical comments in the whole sample was 6.7 (SD = 5.9, range = 0–21).
[b]Of the 18 significant others (47.4%) who were rated high-EE on the basis of $\geqslant 6$ critical comments, 6 (15.8%) also met high EE criteria for hostility, and seven (18.4%) were rated high EE for both hostility and EOI. These "multi-rated" individuals are included with the reported frequencies for EOI and Hostility.
[c]Not applicable (N/A) for low-EE significant others.

Table 4
Intercorrelations between CFI-rated expressed emotion subscales and perceived criticism (Spearman's rho (ρ))

EE variable	Critical comments	EOI	Hostility	Warmth	Positive comments
Critical comments					
EOI	.50**				
Hostility	.70**	.44*			
Warmth	−.29	.11	−.46*		
Positive comments	−.11	−.02	−.33***	.74**	
Perceived criticism	.25	.07	.17	−.42*	−.27

*$p < .01$.
**$p < .001$.
***$p < .05$.

Intercorrelations among the CFI–EE subscales were high (see Table 4). The correlation between hostility and critical comments (Spearman's *rho* (ρ) = .70, $p < .001$) was comparable to that observed by Tarrier et al. (1999) ($r = .77$). The modest correlation between perceived criticism, as rated from the PCS, and significant others' critical comments, as rated from the CFI ($\rho = .25$, $p = .13$), was similar to the correlation of .27 observed by Hooley and Teasdale (1989).

Preliminary analyses

In addition to EE-related measures, candidate variables for inclusion in regression analyses were selected based on their association with outcome and/or with EE. Variables considered were SP subtype; gender; type of significant other; group treatment assignment; and whether significant others were interviewed in person or over the telephone. Because none of these variables were significantly associated with both an EE variable and outcome (dropout, pre-/post-treatment change), they were not included in regression analyses.[6]

Testing predictors of symptom change

Each independent variable (EE subscales, perceived criticism, composite depression score) was entered singly into linear regression equations with the composite social anxiety difference score as the dependent variable. Variables significantly associated with variance in the composite difference score were then entered as

[6]Analyses for these variables included *t*-tests, one-way analyses of variance with Tukey post-hoc comparisons, and χ^2 and Fisher's exact test (for dropout). Results from these analyses are available by request from the first author.

a group. To test the utility of the EE variables as continuous vs. dichotomous measures, they were singly entered as follows: critical comments (continuous, square root transformation), dummy coded criticism ($\geqslant 6$), EOI (continuous, square root transformation), dummy coded EOI ($\geqslant 3$), dummy coded hostility ($\geqslant 1$), warmth, and (square root of) positive comments. Continuous EE-variables and their dichotomized counterpart variables were never entered together so as to avoid redundancy and multicollinearity. Perceived criticism and the composite depression score were entered as continuous variables. Having a significant other rated high in CFI-EOI ($\geqslant 3$) was the only variable associated with a trend toward worse outcome on the composite SP difference score ($F(1, 36) = 3.44$, $p = .07$, $R^2 = .09$). Chambless and Steketee (1999) computed a semipartial correlation to estimate the effect size of EE's influence on outcome in anxiety disorders ($sr = .22$); the semipartial correlation for EOI in this study ($sr = .29$) is comparable. Neither the composite depression score, the remaining EE-variables (critical comments, hostility, warmth, or positive comments), nor perceived criticism was significantly associated with variance in the composite SP difference score. Hence, we were unable to test whether depression might moderate the effects of EE on treatment outcome.

Testing predictors of treatment dropout

Logistic regressions tested the influence of the hypothesized predictor variables on dropout, first separately and then as a group, following the procedure outlined above. Pre-treatment CSR of SP diagnosis was entered first to control for its effects. Controlling for pre-treatment CSR ($B = 1.53$, $SE = .70$, $OR = 4.60$, $p < .05$), having lower self-reported levels of perceived criticism increased the odds of dropping out of treatment ($B = -.83$, $SE = .33$, $OR = .44$, $p = .01$). An independent samples t-test confirmed that treatment dropouts had significantly lower levels of self-reported perceived criticism than treatment completers ($t\ (36) = 2.31$, $p < .01$). There was also a trend toward treatment dropouts having significant others express fewer critical comments during the CFI than treatment completers ($t\ (36) = 1.88$, $p = .07$). However, number of (square root-transformed) critical comments did not contribute to predicting treatment dropout (Wald Chi-Square = .42, $p =$ n.s.).

Discussion

This is the first study to date to explore the influence of significant others' expressed emotion and perceived criticism on cognitive-behavioral treatment outcome for social phobia. We hypothesized that perceived criticism and the components of the high-EE construct (criticism, hostility, and emotional overinvolvement) would be associated with more dropout and worse CBT outcome. We expected CFI-rated criticism to have a significant influence on CBT outcome for the SP participants, insofar as fear of negative evaluation is one of SP's defining features. However, mixed findings about the directionality of CFI-criticism's influence on outcome in the anxiety disorders led us to consider two possibilities. We wondered whether criticism might be associated with worse outcome, as has been found in the majority of EE studies, including PTSD (Tarrier et al., 1999), or with better outcome, as Chambless and Steketee (1999) found in their sample of patients with agoraphobia and obsessive-compulsive disorder. Depression was also considered as a potential predictor of worse treatment outcome due to findings that continuously measured depressive symptoms predicted worse CBT outcome for SP patients (Chambless et al., 1997; Scholing & Emmelkamp, 1999).

Results were as follows: lower levels of perceived criticism were positively associated with treatment dropout and comorbid depression was significantly associated with worse functioning at pre- and post-treatment but not to rate of improvement after CBT. Critical and hostile EE did not influence treatment outcome, as has been found in other anxiety disorders (Chambless & Steketee, 1999; Tarrier et al., 1999), and emotional overinvolvement (EOI) was not associated with treatment dropout (Chambless & Steketee, 1999). In addition, there was a nonsignificant trend for higher levels of EOI to be associated with less symptom change after CBT. In short, our hypotheses were inconsistently supported.

To make sense of these findings, it is important to address the question of how EE was manifested in this sample. Eight out of 11 significant others rated high in EOI were also rated high in either or both criticism and hostility. It is fairly common for EOI and criticism to co-occur (Barrowclough & Hooley, 2003), but the rate of co-occurring hostility may seem surprising for a patient population described as "innocuously sociable"

(Leary & Kowalski, 1995, p. 106). Interestingly, significant others most frequently criticized SP patients for their personal qualities: irritability and snappishness toward the significant other in private while being timid in public ($n = 16$, 42.1%); avoidance of social situations ($n = 10$, 26.3%); constricted communication or emotional expression ($n = 9$, 23.7%); passivity/lack of initiative ($n = 9$, 23.7%); and globally noxious habits, such as "always" being late or not helping with household chores ($n = 10$, 26.3%). Categories of behavior that seemed to elicit qualitatively less punitive critical comments—more in keeping with Chambless and Steketee's (1999) concept of nonhostile criticism—included expressing dislike of the SP patient having a limited social life ($n = 5$, 13.2%); not reaching his or her "potential" ($n = 5$, 13.2%); or being overly hard on him/herself ($n = 6$, 15.8%). Hostility was also commonly expressed as burnout with fulfilling the SP patient's material or emotional needs yet not feeling able to relinquish the care-taking role. This theme was especially salient during the CFI of a sibling who expressed anger at the SP patient for living in her home without contributing to its financial or even daily upkeep, yet could not envision his becoming independent without her help.

Having a significant other who was rated high EOI was associated with a trend toward worse treatment outcome, consistent with Chambless and Steketee's (1999) finding that EOI-predicted treatment dropout in patients with PDA and OCD. In this sample, EOI was rated when significant others interceded for the participant in social situations ($n = 5$, 13%), refrained from talking about topics that were likely to make the participant feel uncomfortable ($n = 4$, 11%), and adjusted daily routines for socially avoidant behavior ($n = 3$, 8%). For example, one mother allowed her son to leave stores and restaurants and wait in their car when he became too anxious. Interestingly, the connection between EOI and worse treatment outcome was found using a very conservative measure of outcome (a composite difference score). This finding must be interpreted cautiously, but it suggests that insufficient power may have been an issue, particularly given that only 11 significant others (28.9%) were rated high in EOI.

In contrast to the frequently cited association between higher EE levels and less change after CBT, the current study found that lower levels of participants' perceived criticism were associated with a higher rate of treatment drop out. Yet dropouts did not differ from completers in their ability to benefit from treatment. These curious findings contrast with previous reports in which perceived criticism heralded worse outcomes in patients with depression (Hooley & Teasdale, 1989) and anxiety (Renshaw, Chambless, & Steketee, 2003). One interpretation is that perceived criticism may be helping to improve treatment outcome in this SP sample in a similar manner to nonhostile CFI-rated criticism in patients with OCD and PDA (Chambless & Steketee, 1999; Peter & Hand, 1988). However, this interpretation needs to be reconciled with our finding that significant others in this sample tended to express both global (i.e., more hostile) and behavior-specific (i.e., more constructive) critical comments on the CFI.

In order to stimulate the needed research to resolve this incongruous finding of higher dropout with statistically similar symptom change, we speculate that the role of perceived criticism may be different for dropouts and completers. Specifically, we hypothesize that the treatment completers differed from the dropouts in their capacity to be positively motivated by their significant others' criticism, whereas the dropouts' "recovery" was an artifact of their dropping out of treatment and returning to an environment that did not push them to change. Two observations from the current study support this possibility. First, dropouts tended to have a higher mean clinician-rated severity of SP than treatment completers. Second, there was a trend for the significant others of dropouts to be less critical than the significant others of treatment completers. In combination, we suggest that those SP patients who do and do not complete treatment may differ both in their severity of illness (dropouts having more severe illness than completers) and in the way they may perceive, use, and elicit change-motivating criticism from their significant others.[7]

[7]One of our reviewers suggested that dropout could be explained by a "disconnect" between perceived and CFI-rated criticism, operationalized as the difference score between these two measures. We tested this hypothesis using the raw and standardized difference scores between CFI-criticism and PCS (CFI-critical comments—perceived criticism score), as well as the residual gain score of CFI-critical comments minus PCS (in acknowledgment of Chambless et al.'s factor analytic finding that CFI-criticism and the PCS load onto a common factor): $(Z_{\text{CFI-crit}} - Z_{\text{PCS}}) \times r_{\text{CFI/PCS}}$. Although the raw difference, standardized difference, and residual gain score significantly correlated with CSR of SP (Spearman's $\rho = -.39$, $p = .02$ for residual gain; $\rho = -.43$, $p < .01$ for raw and standard difference scores), none of these "disconnect" measures were correlated with baseline questionnaire measures, pre-post difference scores, or composite difference scores ($\rho = -.20$–$.12$, ns), and none contributed to predicting dropout in logistic regressions (model $\chi^2 = .02$ for raw difference—1.34 for residual gain, ns).

Three pieces of evidence would be needed to test our speculative hypothesis. First, we would expect that the treatment gains of completers would be more enduring than what we believe to be the artifactual gains of dropouts. Our investigation only tested symptom change at pre- and post-treatment, and future studies should use a longer assessment period. Second, we would expect that completers would score more highly on measures of motivation or treatment expectancy, as has been observed in other studies (see Hofmann, 2000 for review). Third, ''beeper studies,'' in which participants report where they are and what they are doing in response to being paged at regular intervals (e.g., Dabbs, Strong, & Milun, 1997), could be used to differentiate SP patients who expose themselves to challenging social situations from those who we imagine to stay in comfortable environments that do not push them to change.

Our depression-related findings are consistent with those of Erwin, Heimberg, Juster, and Mindlin (2002), who also found that depression was associated with worse functioning at pre- and post-treatment but not to rate of improvement after CBT for SP. It is noteworthy that clinician-rated severity of SP in this sample was positively and significantly correlated with measures of depression but not with self-reported measures of SP (r's $= -.03$ to $-.19$, ns). The CSR reflects the assessing clinician's judgment about how distressing and impairing the patient's diagnosis is, and it may be that this observed distress and impairment is better captured in measures of self-reported depression than in the SP measures themselves.

Generalizability of these findings may be limited for the following reasons: First, this was a treatment-seeking sample, and by virtue of overcoming barriers to treatment (see Olfson et al., 2000), these patients may represent a higher functioning subgroup than people with SP in the general population. Indeed, 95% of the sample was employed or in school, and 83% had earned a Bachelor's degree or higher level of education. Further, one of the exclusion criteria at CARD is prior nonresponse to an adequately delivered CBT treatment. Hence, even with a higher-than-average dropout rate compared to other studies of CBT for SP (27% vs. 18%), this sample may have been one with a high likelihood of succeeding in treatment regardless of whether they completed, which may account for the relative lack of significant differences between completers and dropouts. As noted by one of our reviewers, however, an advantage of having a wider range of outcomes in a prediction study is that it gives more to predict in future research.

An important second limitation is the relatively small sample size of the study. This prohibited the testing of a number of potential predictors, including gender, age, ethnicity, type of CBT, type of significant other, location of interview, experience of therapist, comorbid conditions, and their interaction with each other as well as one or more of the EE-variables.[8]

A third limitation is that EE ratings were made by the first author without checking the reliability of these ratings for a SP population. Although the training process to become an EE-rater is rigorous, and graduates from the training (including the first author) achieve a high level of reliability, additional reliability ratings would help to support this study's claim that the EE-rating system is applicable to SP.

Although therapists for the EGT and CBGT groups were not evaluated for adherence and competence, therapists for both groups were doctoral level students in clinical psychology, which constrains the likelihood that there were large differences in skill. These therapists also received comparable levels of training and supervision from licensed and experienced clinicians.

In conclusion, findings from this study suggest that close relationships impact treatment gains as a result of CBT interventions. Further research replicating these findings, clarifying the mechanisms and developing supplemental interventions, are important future directions.

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[8]Assuming that the contributions of these variables range widely in their effect sizes, and that at least a portion of them would show their effects through interactions with other variables, Cohen (1992) suggests a minimum sample size of 107 (to detect medium effect sizes), and probably closer to 757 (to detect small effect sizes), in order to have sufficient statistical power to test 8 predictors in a multiple regression equation.

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