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Predictors of Comorbid Psychological Symptoms among Patients with Social Anxiety Disorder after Cognitive-Behavioral Therapy

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Abstract

Aim: The present study aimed to examine the predictors of comorbid psychological symptoms in social anxiety disorder (SAD) after cognitive-behavioral therapy (CBT). Methods: One hundred fourteen SAD patients completed manualized group CBT. We examined associations between the personality dimensions of NEO Five Factor Index (NEO-FFI) and the subscales of Symptom Checklist-90 Revised (SCL-90-R) in SAD patients after CBT using multiple regression analysis. Results: High levels of conscientiousness at baseline predicted symptom reduction on 4 SCL-90-R scales, including somatization, obsessive-compulsive, anxiety and global severity index in patients with SAD after CBT. And high levels of agreeableness predicted symptom reduction on 2 SCL-90-R scales, including Hostility and Paranoid Ideation. High levels of openness predicted psychoticism. Conclusion: The present study suggested that high levels of three NEO-FFI dimensions (openness, agreeableness, conscientiousness) might predict comorbid psychological symptoms reduction in SAD patients after CBT. For the purpose of improving comorbid psychological symptoms with SAD patients, it might be useful to pay more attention to these dimensions of NEO-FFI at baseline.

Keywords

Social Anxiety Disorder, Cognitive-Behavioral Therapy, Comorbid Psychological Symptoms

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1. Introduction

Social anxiety disorder (SAD) is one of the most common psychiatric disorders with lifetime prevalence of 12% [1]. Epidemiological studies have established that psychiatric comorbidity is frequent in SAD patients [1]. SAD patients with other psychiatric disorders are associated with increased symptom severity [2].

The efficacy of cognitive-behavioral therapy (CBT) encompassing exposure therapy and cognitive restructuring has been established for SAD [3]. There is now evidence indicating that CBT for a targeted anxiety disorder yields positive benefits upon comorbid disorders [4] [5]. Predictors of less effective treatment may save patients' time by avoiding ineffective treatments, which may be sometimes associated with economic burden [6]. However, few studies have addressed predictors of outcomes in comorbid psychological symptoms after CBT for SAD.

Some studies suggest that personality mediates part of comorbidity [7] [8]. Whether personality characteristics have an impact on CBT outcome is also an important question. In CBT for SAD, however, research to identify predictive personality characteristics has been limited.

The purpose of the present study is to examine the predictive personality characteristics of comorbid psychiatric symptoms in CBT for SAD.

2. Materials and Methods

2.1. Participants

One hundred forty-four SAD patients attended the group CBT program. All of the patients met the following entry criteria: 1) principal Axis I diagnosis of SAD according to the DSM-IV criteria, as assessed by the Structured Clinical Interview for DSM-IV(SCID) [9]; 2) absence of current psychosis, bipolar disorder and substance-use disorder. The patients provided their written informed consent after receiving full explanation of the study's purpose and procedures. The study was performed in accordance with the Declaration of Helsinki and the study's protocol was approved by the Ethics Committee of our institute.

2.2. Treatment

The group CBT for SAD at our department was originally based on the programme developed by Andrews *et al*. [10]. The program consists of the following components: 1) psychoeducation; 2) behavioral experiments; 3) attention training; 4) cognitive restructuring; and 5) *in vivo* graded exposures. The program is run in 16 2-h weekly sessions by two therapists.

2.3. Measures

At pre- and post-treatment the Symptom Checklist-90 Revised (SCL-90-R) and the Liebowitz Social Anxiety Scale (LSAS) were assessed. The NEO Five Factor Index (NEO-FFI) was assessed at pre-treatment.

The SCL-90-R is a widely used and self-reported assessment tool for general psychopathology [11]. It contains 90 items, subdivided into nine subscales of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychosis and global severity index (GSI). Each item is scored between 0 (not at all) and 5 (extremely), and the average of the relevant items was taken to be the subscale score [11].

The NEO-FFI is a 60-item self-reported questionnaire designed to measure the five major personality dimensions of neuroticism, extraversion, conscientiousness, openness and agreeableness [12]. There are 12 items per dimension and the items are answered on a 5-point scale ranging from 0 (strongly disagree) to 4 (strongly agree) [12].

The LSAS is the most frequently used clinician-administered instrument for assessment of social anxiety disorder [13]. It is a 24-item scale that provides separate scores for fear (0 - 3 indicate none, mild, moderate, and severe, respectively) and avoidance (0 - 3 indicate never, occasionally, often, and usually, respectively) of social interaction and performance situations [13].

2.4. Statistical Analysis

All the data were examined using SPSS 18.0 for Windows [14]. First, we used an independent samples t-test or

χ^2 test to compare the demographic and clinical data among the patients who completed the program and those who did not. Second, to examine the predictors of the indices of psychological comorbidity, we performed stepwise multiple linear regression analysis using age, sex, onset, total score of LSAS at baseline, subscales of SCL-90-R at baseline and five personality dimensions of NEO-FFI, involving neuroticism, extraversion, conscientiousness, openness and agreeableness as independent variables and subscales of SCL-90-R at endpoint as dependent variables. All the statistical tests were two-tailed, and $p \leq 0.05$ was considered statistically significant.

3. Results

3.1. Patients Characteristics

Thirty patients (26.3%) out of the 144 who started the treatment dropped out prematurely from the CBT program and 114 patients were included in the current analysis. The reasons for dropouts were mainly the increased anxiety and the difficulties in this therapy to pursue. In baseline demographic and clinical characteristics, no statistically significant differences were seen among the subgroups (**Table 1**).

3.2. Predictors of the Comorbid Psychiatric Symptoms

In regression analysis (**Table 2**), high levels of Conscientiousness of NEO-FFI at baseline predicted symptom reduction on 4 SCL-90-R scales, including somatization, obsessive-compulsive, anxiety, and GSI at endpoint. And high levels of agreeableness predicted symptom reduction on 2 SCL-90-R scales, including hostility and paranoid ideation. High levels of openness predicted psychoticism. In demographic variables, sex (female) predicted symptom reduction on interpersonal sensitivity. Neuroticism, extraversion, and LSAS at baseline predicted nothing significantly.

4. Discussion

The present study suggests that high levels of three dimensions of NEO-FFI (openness, agreeableness, conscientiousness) at baseline may predict comorbid psychological symptoms reduction in patients with SAD after CBT. Especially high levels of conscientiousness may predict symptom reduction on somatization, obsessive-compulsive, anxiety and GSI at endpoint.

Although number of studies has examined the role of particular variables in predicting response to treatment for SAD, the results were inconsistent and inconclusive [15]. From the point of view of group therapy, our findings concerning openness and conscientiousness are consistent with those of Ogrodniczuk *et al*. (2003), who found openness and conscientiousness were directly associated with favorable outcome in group psychotherapy for psychiatric outpatients [16].

High openness patients are more likely benefit from group psychotherapy by being able to embrace the novel experience that psychotherapy offers [16]. High agreeableness is related favorable outcome in psychotherapy because high agreeableness patients are trusting, sympathetic, and cooperative [16]. High conscientiousness

Table 1. Baseline characteristics and mean clinical scores.

	Completer (N = 114)	Dropout (N = 30)	*P* value
Mean age (SD)	33.4 (10.5)	30.7 (10.8)	0.23
Sex (Male, %)	50%	46.7%	0.75
Mean age of onset (SD)	18.9 (7.8)	16.7 (5.9)	0.10
LSAS (SD)	75.3 (25.8)	77.1 (22.5)	0.70
NEO-FFI Neuroticism (SD)	31.6 (8.4)	29.6 (8.2)	0.24
NEO-FFI Extraversion (SD)	21.5 (8.2)	22.3 (6.5)	0.60
NEO-FFI Openness (SD)	28.8 (7.1)	28.7 (4.5)	0.86
NEO-FFI Agreeableness (SD)	30.9 (6.2)	29.9 (5.6)	0.37
NEO-FFI Conscientiousness (SD)	25.3 (7.3)	22.1 (8.0)	0.06

Note: LSAS, Liebowitz social anxiety scale; NEO-FFI, NEO five factor index ; SD, Standard deviation.

Table 2. Predictors at baseline for comorbid psychological symptoms after CBT (N = 114).

	SOM	O-C	I-S	DEP	ANX	HOS	PHOB	PAR	PSY	GSI
Baseline	0.64**	0.73**	0.59**	0.61**	0.54**	0.51**	0.69**	0.46**	0.56**	0.63**
Sex	a	a	0.17*	a	a	a	a	a	a	a
Age	a	a	a	a	a	a	a	a	a	a
Onset	a	a	a	a	a	a	a	a	a	a
LSAS	a	a	a	a	a	a	a	a	a	a
Neuroticism	a	a	a	a	a	a	a	a	a	a
Extraversion	a	a	a	a	a	a	a	a	a	a
Openness	a	a	a	a	a	a	a	a	−0.17*	a
Agreeableness	a	a	a	a	a	−0.28**	a	−0.25**	a	a
Conscientiousness	−0.15*	−0.16*	a	a	−0.16*	a	a	a	a	−0.15*
Adjusted R-square	0.41	0.57	0.40	0.36	0.31	0.42	0.47	0.32	0.31	0.42

Note: Table shows the standardized Beta coefficients (*$P < 0.05$, **$P < 0.01$). a Entered into analysis but not selected in the multiple regression model through application of a stepwise method. Appendices: SOM, Somatization; O-C, Obsessive-compulsive; I-S, Interpersonal sensitivity; DEP, Depression; ANX, Anxiety; HOS, Hostility; PHOB, Phobic anxiety; PAR, Paranoid ideation; PSY, Psychosis; GSI, Global Severity Index; LSAS, Liebowitz Social Anxiety Scale.

patients are also more likely to benefit from psychotherapy because they work hard, tolerate discomfort, and delay gratification of impulses and desires [16].

For the purpose of improving comorbid symptoms with SAD patients, it might be useful to pay more attention to some dimensions of NEO-FFI, especially conscientiousness.

The present study has some limitations. First, we lacked follow-up data and could not refer to long-term effect of CBT for comorbid psychological symptoms. Second, this study did not include several predictors like expectancy regarding therapy or therapist [15]. Future studies should be conducted as follow-up study and place more focus on other predictors like patient expectancy.

5. Conclusion

The present study suggests that high levels of openness, agreeableness, and conscientiousness of NEO-FFI personality dimensions may predict some comorbid psychological symptoms reduction in SAD patients after CBT.

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Conflict of Interest

The authors do not have any conflict of interest to report regarding this study.

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