Brief Clinical Reports

TRAIT ANXIETY AS A PREDICTOR OF BEHAVIOUR THERAPY OUTCOME IN SPIDER PHOBIA

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Abstract. The present study examined whether trait anxiety as indexed by the Spielberger State-Trait Anxiety Inventory (STAI) can be employed as a predictor of behaviour therapy outcome. Thirty-six female spider phobic patients completed the STAI trait anxiety scale, and then received one 2.5 hours session of exposure *in vivo* treatment. Therapy outcome was evaluated by means of standardized self-report measures and a behavioural approach test. Results showed that STAI trait anxiety substantially contributed to therapy success on all outcome measures: the higher the trait anxiety scores, the less patients profited from behaviour therapy.

Keywords: Spider phobia, exposure *in vivo*, therapy outcome, trait anxiety.

Introduction

Trait anxiety has been defined by Spielberger, Gorsuch and Lushene (1970) as "relatively stable individual differences in anxiety proneness" (p. 3). The most frequently used scale for measuring trait anxiety is the Y2-version of the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970). The STAI trait anxiety scale, and its state anxiety counterpart, have been widely employed in both medical and psychological research. In medical settings, it has been examined whether STAI trait anxiety can predict adaptation in patients who have undergone surgery. This line of research has shown that high trait anxious patients recover more slowly, and exhibit more pain and distress than low trait anxious patients (for a review, see Mathews & Ridgeway, 1981). In the psychological literature, the STAI trait anxiety scale has been predominantly employed as a measure of change in psychiatric patients who have received behaviour therapy or other types of psychotherapy (for a review, see Spielberger, 1985). Surprisingly few studies have directly examined whether trait anxiety can be used as a predictor of therapy outcome. An exception are two studies by Butler (Butler & Anastasiades,

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1988; Butler, 1993) who investigated predictors of therapy outcome in patients with generalized anxiety disorder. Results showed that trait anxiety contributed to the prediction of behaviour therapy outcome: "The more anxious these patients are before treatment, the more anxious they are likely to be subsequently (despite making relatively small but nevertheless significant improvements)" (Butler, 1993, p. 213).

The present study examined whether trait anxiety can be used as a predictor of therapy outcome in phobic disorders. A group of spider phobics completed the STAI trait anxiety scale, and then received behaviour therapy. Therapy outcome was assessed by both subjective and behavioural measures of spider fear.

Method

The subjects for this study were 36 female spider phobic patients who applied for treatment at the University Spider Phobia project. Mean age was 31.4 years ($SD = 8.1$; range 19–52). All patients met the DSM-IV (American Psychiatric Association, 1994) criteria for specific phobia, and did not suffer from other mental disorders.

Patients visited the university laboratory twice. During the first session, they participated in various experiments (which will be reported elsewhere), and completed the STAI trait anxiety scale. This scale consists of 20 items, 10 items with a negative content (e.g., "I feel nervous and restless") and 10 items with a positive content (e.g., "I feel comfortable"). Subjects have to indicate how they generally feel by rating each item on a 4-point scale (1 = almost never; 2 = sometimes; 3 = often; 4 = almost always). After recoding the positive items, a total STAI trait anxiety score can be obtained that ranges between 20 (almost never anxious) and 80 (almost always anxious). During the second session, they were treated individually with one 2.5 hours session of exposure *in vivo* as described by Ost (1989). Briefly, this treatment consists of hierarchically structured confrontation with spiders in combination with modelling by the therapist. Before and after treatment, patients completed the Fear of Spiders Questionnaire (FSQ; Szymanski & O'Donohue, 1995), the Spider Beliefs Questionnaire (SBQ; Arntz, Lavy, Van den Berg, & Van Rijsoort, 1993), and carried out a Behavioural Approach Test (BAT). The FSQ is an 18-item self-report instrument that measures fear of spiders. FSQ scores range between 18 and 126, with higher scores reflecting higher levels of spider fear. The SBQ is a questionnaire that assesses the strength of irrational/unrealistic beliefs about (1) spiders and (2) the self during confrontation with a spider. The scores on both subscales range between 0 (very weak beliefs) and 100 (very strong beliefs). The BAT was used as a behavioural index of spider fear. During the BAT, subjects had to approach a live spider in a stepwise manner. There were 8 steps, ranging from 1 "walk towards the spider" to 8 "let the spider walk on your hand".

Results and discussion

Mean STAI trait anxiety score (Cronbach's alpha = 0.95) for this spider phobic sample was 37.2 ($SD = 10.7$), a score that comes very close to the mean STAI trait anxiety score found in normal female subjects (e.g., Spielberger et al., 1970). This result is in agreement with previous studies that found that specific phobia is a very circumscript psychopathological condition, and that the personality characteristics of patients with

Table 1. Pearson product-moment correlations and partial correlations (i.e., when holding pre-treatment scores constant) between trait anxiety as measured by the STAI and therapy outcome measures

	M(SD)	STAI-Y2	STAI-Y2 while holding pre-treatment scores of outcome measures constant
BAT pre-treatment	3.6 (1.9)	−0.15	
FSQ pre-treatment	98.5 (13.4)	0.21	
SBQ spider pre-treatment	50.8 (17.2)	0.26	
SBQ self pre-treatment	56.0 (19.0)	0.47*	
BAT post-treatment	6.6 (2.1)	−0.57**	−0.59**
FSQ post-treatment	47.7 (29.7)	0.64**	0.62**
SBQ spider post-treatment	20.4 (18.1)	0.62**	0.60**
SBQ self post-treatment	21.2 (26.0)	0.59**	0.45*

Note. $N = 36$, * $p < .01$; ** $p < .001$; STAI-Y2 = trait anxiety version of the Spielberger State-Trait Anxiety Inventory; BAT = Behavioural Approach Test; FSQ = Fear of Spiders Questionnaire; SBQ = Spider Beliefs Questionnaire

this disorder do not deviate from those of normal healthy subjects (see e.g., Davey, 1992).

Table 1 (left column) shows mean scores on therapy outcome measures (BAT, FSQ, and SBQ) obtained before and after the treatment session. Paired *t*-tests revealed a significant treatment effect on all measures (all *p*-values < .001): BAT performance increased, while FSQ and SBQ scores decreased.

Most importantly, all correlations between STAI trait anxiety and post-treatment measures of spider fear were significant and substantial, even when controlling for pre-treatment scores (see Table 1). More specifically, trait anxiety correlated positively with subjective fear measures (FSQ and SBQ) and negatively with approach behaviour. Thus, the higher the STAI trait anxiety scores, the less patients profited from exposure therapy.

Jacobson, Follette and Revenstorf's (1984) criterion of *clinically* significant improvement (i.e., a change of 2 *SD*s compared to the pre-treatment score) was applied to patients' individual scores on the outcome measures. The percentages of patients who fulfilled the criterion were 80.6% for BAT, 75.0% for FSQ, and 69.4% for total SBQ. In order to examine whether STAI trait anxiety scores were associated with *clinically* significant improvement, three groups were created: (1) a high therapy success group (*n* = 20; i.e., patients who showed clinically significant improvement on all therapy outcome measures); (2) a moderate therapy success group (*n* = 10; i.e., patients who showed clinically significant improvement on only one or two of the therapy outcome measures); and (3) a low therapy success group (*n* = 6; i.e., patients who did not show clinically significant improvement on any of the therapy outcome measures). Mean and range of STAI trait anxiety scores for each group are shown in Figure 1. A one-way analysis of variance followed by post-hoc *t*-tests, revealed that the three groups had
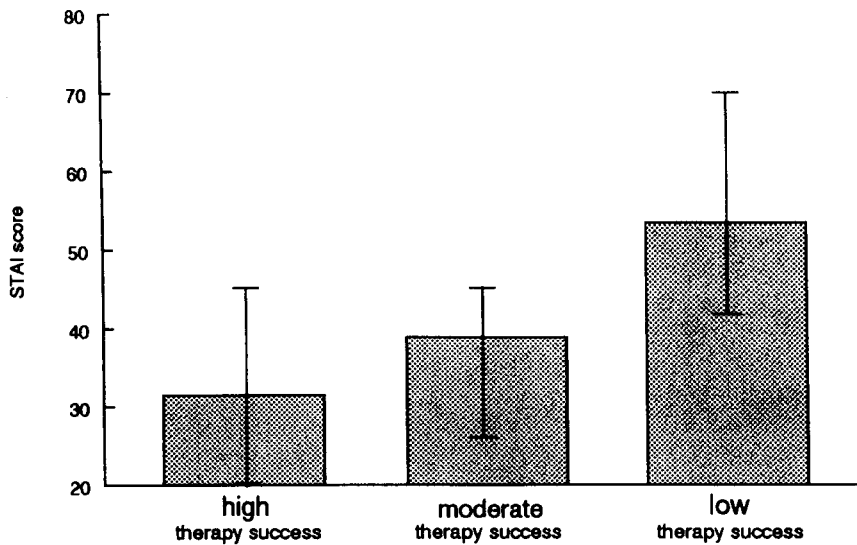
Figure 1. Mean STAI trait anxiety score (and range) for the high therapy success group ($n = 20$), the moderate therapy success group ($n = 10$), and the low therapy success group ($n = 6$)

significantly different STAI trait anxiety scores ($F(2, 33) = 21.3$, $p < .001$). Note further that it was especially the low therapy success group ($M = 53.5$, $SD = 9.5$, range 42–70) that deviated from the other two groups. Finally, the data seem to suggest that STAI scores of 45 and higher are indicative of a negative therapy outcome.

In the past years, Ost and colleagues (Ost, 1989; Ost, Salkovskis, & Hellstrom, 1991; Hellstrom & Ost, 1995; Ost, 1996) have demonstrated that one-session exposure therapy in spider phobics yields good results: improvement rates of 80–90% are not unusual. Despite this high success rate, behaviour therapists still try to maximize treatment efficacy. In this light, it might be helpful to identify patients who are difficult to treat. Previous research has revealed that a monitoring coping disposition (i.e., the tendency to seek out threat-relevant information; Muris, Merckelbach, & De Jong, 1995) and an immature defense style (Muris & Merckelbach, 1996) to a limited extent contribute to behaviour therapy outcome. The current data suggest that trait anxiety is a more powerful predictor of therapy success.

It is not clear *why* patients with high STAI trait anxiety scores profit less from therapy. The most plausible explanation seems to be that high trait anxious patients have higher state anxiety levels during exposure therapy, and that it simply takes more time to bring these anxiety levels down. As the current treatment lasted 2.5 hours, high trait anxious patients may have progressed less far with their exposure exercises (i.e., they were confronted with fewer and smaller spiders). Future studies might investigate whether this line of reasoning is correct. In addition, researchers could further examine whether STAI trait anxiety is a predictor of therapy outcome in other psychological disorders.

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