

## **Cognitive-Behavioural Treatment of Musical Performance Anxiety**

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This pilot study evaluated the effectiveness of a treatment approach for musical performance anxiety that combined progressive muscle relaxation, cognitive therapy, and temperature biofeedback training. Twelve competent pianists who complained of debilitating performance anxiety were randomly assigned to a treatment group; and eight subjects were placed on a wait-list control group. Following a six-week programme of group therapy, significant differences between pre- and post-measurements were observed for the treatment group in performance anxiety, and trait anxiety. The results suggest that it is possible to lower debilitating stage fright in performance-anxious musicians through a cognitive-behavioural treatment approach.

Various forms of treatment for the performance-anxious musician have been reported in the literature. Norton, Maclean and Wachna (1978) conducted a single-case study with a pianist, and found that a combination of systematic desensitisation, cognitive restructuring, and *in vivo* performance practice resulted in lower levels of anxiety and performances of higher quality. A research study by Appel (1974) was conducted with adult pianists utilising systematic desensitisation combined with *in vivo* practice, and a method of music analysis training. The results indicated that the desensitisation procedure was more effective in reducing performance anxiety than music analysis training or a no-training control group. A single-case study involving a woodwind musician was conducted by Levee, Cohen and Rickles (1976). This client had a history of tics and muscle tension in his throat and facial muscles which inhibited his musical performance. After 20 sessions of electromyographic biofeedback training, utilised to relax muscles showing high tension, the client showed a significant reduction in muscle tension and an increased ability to perform as a musician. Studies by Morasky, Reynolds and Sowell (1983) and LeVine and Irvine (1984) also demonstrated that EMG biofeedback training was effective in lowering unwanted muscle tension without decreasing performance quality in anxious violinists, violists, and clarinet players.

Kendrick, Craig, Lawson and Davidson (1982) compared the efficiency of cognitive-behaviour therapy, which emphasised self-instruction and attention-focusing techniques with behavioural rehearsal, to a waiting-list control group, in the treatment of 53 pianists who experienced debilitating musical performance anxiety. The results indicated that the cognitive-behavioural therapy and behavioural rehearsal procedures were effective in reducing

musical performance anxiety and trait anxiety, as compared to a wait-list control group, when measured at a five-week post-treatment assessment. However, there were no significant differences between groups at the termination of treatment. In addition, two anecdotal reports by Grindea (1983) and Havas (1976) provided examples of coping strategies for reducing performance anxiety for a number of musical specialties, developed by music teachers for their performance anxious students.

A number of studies have reported the use of beta-blocking medications for the control of debilitating somatic symptoms of anxiety, related to musical performance. Brantigan, Brantigan and Joseph (1982) reported that beta blockers were effective in controlling performance anxiety, but that they should be combined with psychological coping strategies. James, Pearson and Griffith (1977) found that 40 mg of oxprenolol resulted in a decrease in the physical symptoms of stage fright, accompanied by an improvement in performance. However, Gates and Montalbo (1987) reported that 20 mg of nadolol resulted in no significant differences in the quality of musical performance by 13 singers who took either the drug or a placebo for performance anxiety. Further, a survey of musicians (N = 2212) in 48 American orchestras indicated that stage fright was the most frequently mentioned performance problem, and that many performers use beta blocking medications without medical supervision (Fishbein and Middlestadt, 1987).

The studies cited thus far have been based on the treatment of performance anxiety using a variety of anxiety-reduction techniques. In contrast to the anxiety-reduction theorists, Hamann and Sobaje (1983) maintained that performance could be enhanced in anxious musicians by focusing on the further development of performing skills. They suggested that anxiety "has motivational or drive properties which can increase levels of performance for subjects depending on their task mastery" (p. 39). This conceptualisation of the stage fright phenomena, if substantiated, would suggest a re-evaluation of the anxiety-reduction treatment strategies (Steptoe, 1983). Further research is necessary to examine this hypothesis.

### **Purpose of Study**

The purpose of this pilot study is to evaluate the effectiveness of a treatment approach to musical performance anxiety, which combines the use of progressive muscle relaxation, cognitive therapy and temperature biofeedback training in the treatment of performance anxiety. It was predicted that a group of performance-anxious musicians receiving this multi-faceted treatment would show greater reduction in anxiety, related to musical performance, than a wait-list control group.

### **Method**

#### *Subjects*

Twenty undergraduate music students from a school of music volunteered to participate in this study. Twelve subjects were randomly assigned to the treatment group (six females and six males), and the remaining eight subjects

(six females and two males) were assigned to a wait-list control group. The wait-list group subjects were told that they would receive treatment after a period of six weeks. Each subject was pursuing a university degree in musical performance, and complained of debilitating anxiety when playing an instrument in public. This anxiety had persisted in spite of extensive practice, preparation, and high levels of training. The instrumental categories included piano, voice, brass and woodwind.

### *Procedure*

Prior to the intervention or wait-list period, each participant completed the following questionnaires: State-Trait Anxiety Inventory (Spielberger, Gorsuch and Lushene, 1970), The Test Anxiety Inventory (Spielberger, 1980), and the Autonomic Perception Questionnaire (Borkovec, 1976). These three measures have been widely used in anxiety research. Subjects were also given the Rational Behaviour Inventory (RBI) (Shorkey and Whiteman, 1977). The RBI yields an overall index of rationality, with higher scores indicating greater rationality. It is composed of 11 separate factors each relating to a key component of rationality. These 11 factors are: (1) catastrophising, (2) guilt, (3) perfectionism, (4) need for approval, (5) caring and helping, (6) blame and punishment, (7) inertia and avoidance, (8) independence, (9) self-downing, (10) projected misfortune, and (11) control of emotions. This Inventory is based upon Ellis' concepts of irrationality (Ellis and Harper, 1975), and has been shown to be associated with trait and general anxiety (Himle, Thyer and Papsdorf, 1982; Thyer, Papsdorf and Kilgore, 1983).

Musical performance anxiety was rated on the Performance Anxiety Inventory (PAI) (Nagel, Himle and Papsdorf, 1981) as shown in Fig. 1.

This Inventory consists of 20 questions concerning the recital experiences of performing musicians, and was developed for this project. The Inventory is based on the general form of Spielberger's Test Anxiety Inventory (1980), only in this case the questions are about music performance. Both inventories share the common assumption, that anxiety is composed of cognitive, behavioural and physiological components. It is our contention that this three-systems model of anxiety (cognitive, behavioural and physiological) is applicable to music performance anxiety, as well as to other kinds of anxiety. Studies by Craske and Craig (1984) and Fogle (1982) have shown that music performance anxiety is similar to other types of performance anxiety such as public speaking anxiety, sexual performance disorders, and sleep disorders. Therefore, it seemed appropriate to base the Performance Anxiety Inventory upon the three-systems model of anxiety, and to design a treatment protocol to address these systems directly.

To address the internal consistency reliability of the Performance Anxiety Inventory, coefficient alpha scores were calculated (Cronbach, 1951). The calculation yielded an alpha score of .89 for the entire scale. This reliability score is highly satisfactory.

After the completion of the questionnaires, the treatment group met once a week during a six-week period for group sessions, and once a week for a six-week period for individual biofeedback temperature regulation training to assist in the development of relaxation techniques, based on the procedure

FIG. 1  
Performance Anxiety Inventory

	<i>Almost Never</i>	<i>Some- times</i>	<i>Often</i>	<i>Almost Always</i>
1. I feel confident and relaxed while performing before an audience	1	2	3	4
2. While giving a recital my hands are cold	1	2	3	4
3. Thinking about the evaluation I may get in a recital interferes with my performance	1	2	3	4
4. If I make a mistake, I usually panic	1	2	3	4
5. During a recital I find myself thinking about whether I'll even get through it	1	2	3	4
6. The harder I work in preparing for a concert, the more likely I am to make a serious mistake	1	2	3	4
7. Thoughts of doing poorly interfere with my performance	1	2	3	4
8. I feel very jittery when giving an important recital	1	2	3	4
9. Even when I'm well-prepared for a recital, I feel very anxious about it	1	2	3	4
10. I start feeling very uneasy just before getting feedback on my performance	1	2	3	4
11. During recitals my hands sweat	1	2	3	4
12. I wish recitals did not bother me so much	1	2	3	4
13. During recitals I am so tense that my stomach gets upset	1	2	3	4
14. I seem to defeat while working on important recitals	1	2	3	4
15. I feel very panicky when I approach an important recital	1	2	3	4
16. If I were to take an important recital examination (jury), I would worry a great deal before taking it	1	2	3	4
17. During recitals I find myself thinking about the consequences of blocking	1	2	3	4
18. I feel my heart beating very fast during recitals	1	2	3	4
19. As soon as a recital is over, I try to stop worrying about it, but I just can't	1	2	3	4
20. During a recital I get so nervous that I block	1	2	3	4

developed by Fuller (1977). During the treatment group sessions subjects were given additional training in progressive muscle relaxation (Bernstein and Borkovec, 1973). When subjects reported a relaxed state, they were presented a music performance hierarchy as shown in Fig. 2, which contains items describing progressively stressful musical performance situations.

FIG. 2

## Performance Anxiety Hierarchy

1. Imagine you have just received the recital hall for your graduation programme which will be held in six weeks.
2. Three weeks before your recital, imagine yourself trying out your programme for several friends. They offer suggestions different than those upon which you and your professor have agreed.
3. It is one week before the recital; imagine that your programmes are sent to the school for posting, and you see them up on the bulletin boards.
4. It is three days before your recital; imagine some people telling you they are looking forward to hearing you.
5. Imagine that you are working on some difficult technique two days before the recital and it does not go well.
6. You are in bed the night before the concert, and your mind flashes to the performance. You wonder if you are properly prepared.
7. Imagine that you are warming up in the recital hall before people begin to arrive.
8. Imagine that you are waiting backstage—the five-minute bell sounds.
9. Imagine yourself walking on stage; you receive a warm ovation from the audience.
10. Your arms feel weak and shaky and your hands wet.
11. Imagine yourself half-way through your first piece, you mess up (technique fails) a passage you had worked hard on.
12. Your mind flashes to a tricky spot coming up soon. You wonder if you'll get through it okay.
13. Imagine yourself toward the end of your last piece; suddenly you have memory slip.

Based upon the individual anxiety responses to these hierarchy items, subjects were instructed in cognitive-coping strategies (Meichenbaum, 1978) and rational-emotive therapy (Ellis and Harper, 1975). These treatment approaches were taught in a manner to help subjects learn to identify and evaluate their initial anxiety responses to the hierarchy items. They were combined to include the following content: (a) a presentation of the theoretical rationale for relating negative and irrational thinking to performance anxiety, (b) the substitution of positive-coping statements for negative thoughts about performance anxiety, (c) the challenging of irrational self-statements related to performance anxiety and the subsequent substitution of more rational self-statements about such anxiety.

After the completion of the six-week treatment programme, both the treatment group and the wait-list control group completed a series of questionnaires identical to those given in the pre-treatment or pre-control assessment. In addition, due to the innovative aspect of this research, each subject in the treatment group was asked to submit a brief report of his or her musical performance experiences throughout the treatment programme.

## Results

One-way between-group analyses of variance (ANOVAS) yielded no significant differences ( $p < .05$ ) in mean scores between groups for all variables at the initial assessment. The mean scores for all variables are presented in Table I.

TABLE I  
Scores for all measures for treatment group and wait-list control group

<i>Measure</i>	<i>Treatment (N = 12)</i>		<i>Wait-List (N = 8)</i>	
	<i>mean</i>	<i>SD</i>	<i>mean</i>	<i>SD</i>
PAI				
pre	53.83	7.88	50.50	8.31
post	37.16	7.48	47.87	6.68
A-STATE				
pre	39.25	8.26	38.00	12.18
post	35.25	12.95	41.00	9.19
A-TRAIT				
pre	43.00	10.46	38.50	9.81
post	37.75	8.11	40.37	8.27
TAI				
pre	40.91	13.60	37.37	13.45
post	32.91	7.44	35.87	14.76
APQ				
pre	57.16	29.85	52.62	26.54
post	54.41	27.53	49.00	26.22
RBI (TOTAL)				
pre	21.91	4.50	21.75	3.49
post	22.25	5.81	22.87	3.27
FACTORS (RBI)				
1. Catastrophising				
pre	1.83	1.46	1.87	1.45
post	2.08	1.16	1.75	.88
2. Guilt				
pre	1.33	1.15	1.62	.91
post	1.08	1.08	1.87	1.12
3. Perfectionism				
pre	3.16	.57	3.50	.75
post	3.33	.65	3.50	.53
4. Need for Approval				
pre	1.58	.99	2.25	1.16
post	2.16	.93	2.25	.88
5. Caring and Helping				
pre	.66	.65	.25	.46
post	.33	.49	.25	.46
6. Blame and Punishment				
pre	3.08	1.08	3.12	.35
post	3.25	.86	3.12	.64

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7. Inertia and Avoidance				
pre	1.91	.99	1.37	.74
post	2.08	1.16	1.87	.64
8. Independence				
pre	1.50	.90	2.00	1.19
post	1.66	.77	2.12	.99
9. Self-Downing				
pre	2.00	.95	1.75	.46
post	2.16	.83	1.75	.46
10. Projected Misfortune				
pre	1.83	1.33	2.00	1.06
post	2.08	1.08	2.00	1.06
11. Control of Emotions				
pre	2.16	.83	2.00	.53
post	2.41	1.24	2.37	.74

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To assess for between group changes in pre-post scores, two-way, repeated-measures ANOVAS were calculated for each of the dependent measures. The results showed significant time effects  $F(1, 18) = 28.10, p < .0001$  and significant interaction effects  $F(1, 18) = 13.84, p < .001$  on the Performance Anxiety Inventory, indicating a greater reduction in performance anxiety scores in the treatment group. The Trait Anxiety Inventory showed significant interaction effects  $F(1, 18) = 5.82, p < .02$ , indicating that the reduction in trait anxiety was greater for the treatment group. The Test Anxiety Inventory showed significant time effects  $F(1, 18) = 7.36, p < .01$ , and a trend towards significant interaction effects  $F(1, 18) = 3.44, p < .07$ , suggesting a greater reduction in test anxiety for the treatment group than the wait-list group. On the Rational Behaviour Inventory the results showed significant time effects  $F(1, 18) = 5.01, p < .03$  for sub-scale 7 (inertia and avoidance). No other significant differences were observed.

All self-report data received from the treatment group included references to a reduction in levels of performance anxiety. The following two excerpts from the self-report data are typical examples of the nature of this reduction:

“Having the opportunity to talk with other musicians who share my own fears has been a very positive experience. The discussion of ‘I must do well’ pressures that the others and I place upon ourselves has been a big step in helping me feel less pressured and more confident, even in other areas besides musical performance. The kinds of coping tools we used, the relaxation, and the talking down of ‘musts’ can be applied to all experiences in everyday existence, giving us more practice in the ability to cope more easily when we do have the opportunity to perform.”

And further, “through the Performance Anxiety Programme, I feel that I have more control over my body (hands and knees shaking) as well as mind-memory lapses. I also notice that I have learned to relax more, becoming more efficient in my practice habits. I learned that I can accomplish much more if I relax rather than tying myself up in knots. That is a skill that everyone, not just musicians, would benefit from.”

### Discussion

The data support the hypothesis that performance anxiety, as measured by the Performance Anxiety Inventory, was significantly lowered in response to the treatment provided. This finding suggests that this Inventory is sensitive to changes due to therapeutic interventions. Since the Performance Anxiety Inventory focuses upon anxiety while performing, this Inventory may have significant utility as an outcome measure for future research studies. The difference in the reduction in trait anxiety was also significant when compared with the wait-list group. This suggests that musical performance anxiety is associated with other types of anxiety, especially anxiety of long duration. There was no significant differences in the change in the levels of state anxiety between groups. It is possible that the state anxiety scores reflect the relatively relaxed situation under which this questionnaire was administered to both groups.

There were no significant pre-post mean score differences between groups on the Rational Behaviour Inventory. This implies that irrationality may not be a strong factor in musical performance. This is not surprising since irrationality has been shown in previous research to have a minimal relationship to phobic types of anxiety such as stage fright (Thyer, Papsdorf and Kramer, 1983). On the other hand, because of the particular demands laid upon the performing musician, the natural desire for a perfect performance and special recognition may obscure the rather subtle differences between these values and the dangers of *irrational* perfectionism and *excessive* need for approval. Further research is needed to examine this issue.

The treatment group also showed a trend towards a reduction in test anxiety. Since performing in public is similar in many ways to taking a test, this finding is not surprising.

The treatment group did not show a significant reduction in scores on the Autonomic Perception Questionnaire in contrast to the wait-list group, in spite of the biofeedback relaxation training. This finding may be explained by a number of factors. Morris and Liebert (1970) reported that negative self-statements were more debilitating for a task involving a great deal of intellectual skill than a task accompanied by heightened physiological arousal. In addition, one may speculate that the physical symptoms of arousal may not be as detrimental to musical performance as are trait or performance anxiety responses. Further research is needed to explicate any differences between the physiological responses related to anxiety, as experienced by performing musicians, as compared to the presence of anxious cognitions.

In evaluating the effectiveness of cognitive-behavioural interventions for the treatment of performance anxiety, the results of this study suggest a method for such reduction and highlights a number of relevant issues and directions for future research. The study is limited by the small numbers of subjects, and the results affected by the fact that small samples require a greater difference between groups to reach the same *p* values as larger samples (Carver, 1978).

The Performance Anxiety Inventory was found to be a useful instrument for the measurement of performance anxiety. Additional research is needed on this instrument, which will lead to its refinement and further development.



Finally, further research is also needed to determine which aspects of the treatment programme were most effective in reducing performance anxiety, or if the combination of procedures used in this approach is most appropriate.

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