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ABSTRACT

Psychology students at the University of Minnesota were studied for the effects of different interventions on test anxiety and the academic performance of students with debilitating test anxiety. One group of students received peer tutoring and training in the use of study skills; a second group received training in cue-controlled desensitization (CCD), a method of reducing test anxiety through relaxation techniques; a third group was trained in both CCD and peer tutoring/use of study skills; and a fourth group received no interventions. All groups were measured for self-reported test anxiety, anxiety during actual test taking, and general anxiety. Academic performance was assessed through students' weekly quiz scores, final examination scores, and final grades in their psychology class. The results were not conclusive on the effects of intervention on course performance, test anxiety, or general anxiety. However, there was evidence that students who received CCD training experienced significantly less anxiety under actual examination conditions at posttest than students not trained in CCD. Furthermore, students trained in CCD showed significant reduction in debilitative test anxiety between pretesting and follow-up testing. It was suggested that programs with both anxiety reduction and study counseling components would be most effective in reducing test anxiety and improving test performance among underprepared students with poor study and test-taking skills. (Author/MJL)

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COUNSELING/PEER TUTORING FOR TEST ANXIOUS UNDERPREPARED STUDENTS: A Preliminary Evaluation

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ABSTRACT

This study assessed the impact of a multifaceted counseling/instructional program on the test anxiety and grade performance of academically underprepared students. The program, combining anxiety reduction, tutoring and study skills training elements, was offered within the structure of an existing academic course. Results indicated that the program had some success in reducing anxiety, but no impact on grades. Suggestions are offered for further research on effective interventions with these students.

Thomas Brothen, Editor

COUNSELING/PEER TUTORING FOR TEST ANXIOUS UNDERPREPARED STUDENTS: A Preliminary Evaluation

While many studies have examined the efficacy of various test anxiety treatments (Allen, 1980; Tryon, 1980), very little research has addressed the reduction of test anxiety in academically underprepared or "high risk" college students (Hudesman & Weisner, 1979). Such students have often been unsuccessful applicants to higher education by traditional admissions criteria, e.g., standardized test scores and high school rank. However, they now represent a growing proportion of the college population (Cross, 1974).

Empirical examination of the effects of test anxiety reduction strategies with academically high-risk students seems warranted since it is unclear whether these students will respond as positively to available interventions as do students possessing stronger academic skills and achievement records. When test anxiety occurs in underprepared students, it is frequently grounded in a history of subpar academic performance. It is plausible that test anxiety may be more likely to persist if test performance has been consistently poor in the past. In view of this factor, and the differences between underprepared students and students typically employed in test anxiety treatment research, it seems important to study the applicability of current treatments for these students.

The present study was designed to assess the impact of a multifaceted counseling/instructional program for underprepared students who experience debilitating test anxiety. The program combined two potentially effective elements: professionally administered cue-controlled desensitization (Lent & Russell, 1978), and a peer-administered intervention which focused on intensive course tutoring and study skills training (Borow & Brothen, 1979). Prior research has shown a number of anxiety interventions to be effective in reducing self-reported test anxiety; however, multifaceted treatment packages (e.g., combining desensitization with study counseling) have received the most consistent support in reducing subjectively-experienced test anxiety and improving academic performance (Allen, 1980; Tryon, 1980).

Recently a number of "self-control" methods have been used to treat test anxiety (Barrios & Shigetomi, 1979). Compared to more traditional anxiety reduction techniques (e.g., systematic desensitization), these strategies seek to provide clients with active skills for coping with a wide variety of anxiety-producing situations. Cue-controlled desensitization, a self-control form of systematic desensitization, has previously been effectively combined with study skills training in reducing test anxiety and enhancing academic performance (Lent & Russell, 1978).

The present study compared the effects of a combined cue-controlled desensitization/peer tutoring-study skills program with three other conditions (cue-controlled desensitization alone, peer tutoring-study skills alone, and a wait-list control group) on the test anxiety, general anxiety and academic performance of underprepared college students.

Authors' names are listed alphabetically, reflecting an equal division of labor on the study. The authors wish to thank Dr. Joan B. Garfield for her statistical consultation.

METHOD

Subjects

Individuals were selected from two sections of a large introductory psychology course in the General College, the open admissions college of the University of Minnesota. Peer tutoring on course material was provided to students enrolled in only one of the two sections. Students were selected for the study if they (a) scored in the upper 25% (scores ≥31) on the Debilitating Scale of the Achievement Anxiety Test (Alpert & Haber, 1960) and (b) indicated interest in a small group program for test anxiety reduction when subsequently contacted by telephone. Thirty-one students (16 males and 15 females) with a mean age of 21 years (range 18 to 34) met these criteria and were assigned, in stratified random fashion, to one of four conditions for the treatment phase. Academically, these students had a mean high school rank at the 36th percentile and a mean score on the verbal section of the Cooperative School and College Ability Test (SCAT) at the 39th percentile (12th grade national norms). Compared to other students in the College, students in study ranked near the 50th percentile on locally-designed placement tests of arithmetic and writing organizational ability. Students participated in the study without receiving course credit or additional inducements other than the offer of help for test anxiety.

Dependent Measures

Dependent measures were selected from the self-report and performance domains. Self-report test anxiety was measured by the Achievement Anxiety Test (AAT), consisting of two sub-scales designed to differentiate debilitative (AAT-) and facilitative (AAT+) test anxiety (Alpert & Haber, 1960). State test anxiety, defined as the self-report of anxiety during actual test-taking, was assessed by the State form of the State-Trait Anxiety Inventory (STAI-S; Spielberger, Gorsuch, & Lushene, 1970). The Trait form of this inventory (STAI-T) was used to measure general anxiety. Academic performance was assessed by subjects' weekly quiz scores, final exam scores, and overall final grades in their psychology class.

Procedure

During the second week of the quarter, all students in both the tutored and nontutored sections of the course completed the AAT and STAI-T. In addition, the STAI-S was administered to all students immediately before two quizzes (at the third and eighth-weeks) and the final exam. During the final (tenth) week of classes, students again completed the AAT and the STAI-T. By having all students complete all administrations of the dependent measures during regular class meetings, the identity of the experimental and control students was preserved, assessment was kept separate from the other experimental procedures, and state anxiety measurement was obtained under *in vivo* examination conditions. To help minimize expectancy effects, the course instructor (the female co-author) was not informed of the identity of the test-anxious participants until the quarter was over. Weekly quizzes were scheduled for all students (experimentals, controls, and nonparticipants) in both course sections. Because measures were collected in class at several points, data were not complete for all variables. (Missing data distributed evenly across conditions). Data analysis was based on the 23 students who completed treatment; final n's per condition are indicated below.

Treatments

Study skills-tutoring (ST; n = 4). Students in this condition received a peer tutoring/study skills intervention (Borow & Brothen, 1979) as part of their enrollment in the tutored section of the course; they were not offered specific treatment for test anxiety. During the first week of class, all students in the tutored section were organized into 10-15 member groups, and each group was assigned a peer tutor. Tutors were undergraduates who had achieved above-average work in a previous introductory psychology course. The tutors were enrolled in an advanced seminar in psychology and received college credit for participation in the seminar and tutoring services. Tutoring groups met for weekly 45-minute sessions during the quarter. As part of each session, tutors conducted reviews of the week's lecture materials, answered student questions, and administered a practice quiz. They also offered training in study skills and test-taking methods. Tutors met weekly with the course instructor to plan tutoring activities, discuss problems, and review course materials. They were also trained by the course instructor in the use of study skills materials and in factors related to students' academic success.

Cue-controlled desensitization (CCD; n = 8). Students in this group, who were enrolled in the nontutored course section, received training in CCD which closely followed the procedures described by Lent & Russell (1978). The CCD program consisted of four steps: (a) progressive muscle relaxation training; (b) pairing the relaxed state with a self-presented cue-word (calm); (c) presentation of imaginal scenes from a standard 16-item test anxiety hierarchy; (d) coping with tension by self-administration of the cue-word. CCD subjects were instructed to practice the relaxation exercises and cue-word association daily between sessions. Training in CCD was conducted in six weekly 45-minute small group sessions led by three doctoral-level counseling psychologists; each counselor had prior experience with relaxation and systematic desensitization techniques and specific training in cue-controlled desensitization. CCD subjects did not participate in the tutor-led groups, nor did they receive study skills instruction. They were, however, presented with the same textbooks, lectures and practice tests given to tutored section students.

Cue-controlled desensitization + study skills-tutoring (CCD/ST; n = 7). This condition received training in CCD, in addition to participating in the tutored course section. Thus, they were taught specific test anxiety coping skills and received peer tutoring/study skills instruction.

Wait-list control (WLC; n = 4). This condition consisted of students in the nontutored section who were informed that scheduling conflicts prevented their receiving test anxiety intervention until the end of the quarter.

RESULTS

The four self-report anxiety measures were each subjected to a repeated measures analysis of variance.[1] Although analysis of the state anxiety variable (STAI-S) did not indicate treatment differences among the individual conditions, the pattern of mean changes did suggest one differential treatment effect. Specifically, students in the CCD groups (CCD + CCD/ST) reported significantly less state anxiety at the post-test than students who did not receive CCD training

(ST + WLC), $t(13) = 5.87$, $p < .001$. (There were no significant mean differences between these groups at the pre-test, $t = .94$). Further, examination of state anxiety scores indicated that 10 of the 15 students who received CCD training exhibited decreased anxiety between pre- and post-testing, compared to only one of the non-CCD-treated students. The difference in proportion was significant, $t(13) = 1.83$, $p < .05$. Table 1 presents the means and standard deviations of the CCD-treated and non-CCD-treated groups at pre- and post-testing on the state anxiety scale.

While the debilitative test anxiety scale (AAT-) did not reach statistical significance ($F(1,14) = 4.24$, $p < .06$), there was a pre- to post- reduction in debilitative test anxiety across conditions. There were no significant effects on the facilitative test anxiety scale (AAT+). Although the treatment-by-time interaction effect was not significant for the STAI-T measure, $F(1,9) = 2.74$, $p < .12$, there was a tendency for CCD students to report improvement in trait anxiety relative to the other conditions. Analyses of variance on students' nine course quiz scores, final exam scores and course grades did not reveal any significant differential treatment effects.

Additional data on nine of the CCD-treated students was collected at an 8-week follow-up assessment. (Since ST and WLC students were offered CCD training after post-testing, follow-up data was not available for these groups.) Analysis suggests that CCD-treated students continued to experience a further reduction in debilitative test anxiety, reporting significantly less anxiety than at pre-test; correlated $t(8) = 4.72$, $p < .01$. Means and standard deviations for CCD-treated students at pre- and follow-up testing on the AAT- scale are also presented in Table 1.

DISCUSSION

The purpose of this study was to implement and test the effects of a counseling/instructional program on the test anxiety and course achievement of academically underprepared students. Taken collectively, the results did not indicate conclusive differential change for individual treatment conditions in course performance, self-reported test anxiety, or general anxiety. However, there was evidence indicating that students who received CCD training (the CCD and CCD/ST groups) experienced significantly less state anxiety under actual exam conditions at post-test than students not trained in CCD (the ST and WLC groups). Also, CCD-treated students reported significant reduction in debilitative test anxiety between pre- and follow-up testing.

Individual follow-up interviews with students in the desensitization groups, conducted eight weeks after the program's completion, indicated that they found the program helpful and that its positive effects extended to other anxiety-producing situations. They noted, however, that the intervention might have been strengthened by including *in vivo* practice as a part of the CCD training and allowing for more group interaction within treatment sessions.

Little research has been conducted on reducing the test anxiety of academically underprepared students. Most test anxiety treatment research involves individuals who (a) have more successful academic histories than the students in this study, and (b) are often given course credit for participating in a

program which overtly appears as a research study. Extra credit was not given to participants in this study and the treatment was presented more as a College program than a research study. Further, the course instructor was not aware of which students were involved in the study; dependent measures were collected in a relatively unobtrusive fashion, as part of the course proper (although follow-up assessment occurred apart from the course); and, this study included assessment of students' anxiety immediately before several in vivo class examinations. While these features were intended to reduce the demand characteristics, reactivity and artificiality of the experimental situation, they unfortunately led to a substantial quantity of missing data (e.g., due to class absences). This factor, resulting in small sample sizes and subsequent loss of statistical power, requires that the present results be viewed with caution. Thus, despite the potentially strong treatment program, methodological considerations preclude firm inferences being drawn from these findings. Clearly, this study should be replicated on a similar population of underprepared students, using a larger sample size, and with special attention given to ways of gathering more complete data.

It may be that underprepared students, perhaps due to their weak academic achievement histories, may not experience changes in test anxiety as rapidly as students with stronger achievement records. The present findings suggest that state (or situational) anxiety reported during actual exams may have been more susceptible to short-term intervention than the more global and firmly-established self-perceptions of test anxiety reflected in the Achievement Anxiety Test. Indeed, students receiving GCD showed a significant decrease in state Anxiety (STAI-S) between pre- and post-testing, but did not report a significant reduction in debilitative test anxiety (AAT-) until the follow-up. Thus, longer and more intensive interventions, incorporating more extensive anxiety-coping practice may be necessary for maximal efficacy. Also, since global self-perceptions likely change slowly, longer-term follow-up assessments seem indicated.

The inability of the treatment program to produce differential grade improvement also deserves comment. While the CCD component of treatment had some success in reducing state anxiety during exams, this reduced anxiety did not translate into improved grades. It may be that the peer-offered study skills-tutoring portion of treatment was not sufficiently strong to produce grade differences. Some support for this possibility comes from several earlier studies conducted on students in the General College which have similarly failed to produce superior grade effects when peers administered the tutoring program (Borow & Brothen, 1979). This suggests that it may be important to isolate successful ingredients of remedial academic programs for underprepared students. (Perhaps it would be instructive to identify self-developed strategies used by underprepared students who are academically successful in college.)

In summary, given this study's limited sample sizes, the present findings need to be viewed as preliminary. However, it is the intent of this paper to stimulate further development and evaluation of potentially effective interventions for underprepared students. Clearly, it cannot simply be assumed that treatment programs found successful with more traditional students will automatically be effective with underprepared students. Since these students often have poor study and test-taking skills, programs offering some balance of both strong anxiety reduction and study counseling components would seem to offer

considerable promise. Implementing such a program through an existing course structure (e.g., in large orientation or introductory courses), as presented in this study, is one way to provide intervention in an efficient manner.

Table 1

Means and Standard Deviations for CCD-treated and Non-CCD-treated Students on State and Test Anxiety Measures

Condition	Measure									
	State Anxiety					Test Anxiety				
	Pre-test			Post-test		Pre-test			Follow-up	
	n	M	SD	M	SD	n	M	SD	M	SD
CCD	15	47.6	12.3	40.0	7.7	9	33.9	3.6	26.2	4.0
Non-CCD	5	49.8	4.6	51.8	7.2					

Note: CCD = students in both groups that received cue-controlled desensitization training (i.e., the CCD and CCD/ST groups). Non-CCD = students in the two conditions (WLC and ST) which were not offered cue-controlled desensitization. State anxiety and test anxiety were measured, respectively, by the State-Trait Anxiety Inventory, State form and the Achievement Anxiety Test, Debilitative scale.

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Footnote

1. It should be noted that the small sample sizes reduce the power of significance tests, thereby increasing the probability of a Type II error, i.e., failing to reject the null hypothesis when it is false (cf. Cohen, 1969).