Abbreviated Upright Behavioral Relaxation Training for Test Anxiety Among College Students: Initial Results

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Abstract

Effect of abbreviated upright Behavioral Relaxation Training (BRT) on two self-report measures of test anxiety was examined using a quasi-experimental pre-post between groups (N = 20) research design with self-referred college students. At time 1 (T1) assessment, all participants completed the Abbreviated Test Anxiety Scale (ATAS) and were trained in the use of the Subjective Unit of Discomfort (SUD) rating scale. Participants recorded SUD ratings in vivo over a one-week period. Experimental group participants received two group sessions of upright BRT with instructions to practice BRT in vivo. Control group participants simply recorded SUD ratings during the intervention period. At time 2 (T2) assessment, all participants provided SUD rating data and completed the ATAS. Correlated t-tests indicated statistically significant differences in ATAS and SUD ratings in favor of abbreviated BRT. Robust effect, despite small sample size, provides further evidence for the effectiveness of BRT as an easy to learn, rapid relaxation training procedure for anxiety disorders. Application of abbreviated BRT in a group setting is a significant advance. Replication using a larger sample size with measurement of relaxed behavior and effect on academic performance is needed.

Keywords: Behavioral relaxation training, anxiety, controlled study.

Introduction

Within the scientific community there is broad agreement that test anxiety negatively affects academic performance (Zeidner, 1998) across the educational spectrum from primary to college levels (Hembee, 1988; Siepp, 1991). The conclusion, based on numerous meta-analyses, is that approximately two-thirds of low-test anxious students will score higher that the average high-test anxious student (Schwarzer, 1990). In a large sample of undergraduate students, Chapell, Blanding and Silverstein et al (2005) reported that high-test anxious college students score one-third letter grade lower (e.g., from a B+ to B). In addition, females consistently report higher test anxiety. Unfortunately, because test anxiety is not a DSM diagnosis (Diagnostic and Statistical Manual for Mental Disorders, 1997), little systematic research has been conducted to identify empirically valid measures and interventions for test anxiety.

Recently, test anxiety has been conceptualized as a type of performance anxiety (Powell, 2004a). Performance anxiety is most closely associated with social phobia; however, the characteristics of performance anxiety related to completion of tests or examinations are different and allow differential diagnosis. Relative to test anxiety: (a) the anxiety is debilitating, (b) though overall impairment is limited, (c) fear is restricted to specific performance situations, (d) self-established standards of performance are high, (e) fear of scrutiny is limited, (f) anticipatory anxiety is variable, and (g) the individual remains committed to performing the feared task (Powell, 2004a). Nonetheless, there is some likelihood that debilitating test anxiety may co-occur with other behavioral disorders such as specific phobia and general anxiety disorder. Precise data on this relationship remain elusive.

Despite lack of consensus regarding whether test anxiety is a subtype of performance anxiety or an anxiety disorder not other wise specified, a large number of students experience significant anxiety during test taking situations. Indeed, the ubiquity of test anxiety on college campuses has resulted in university counseling centers frequently offering services for test anxiety management. While traditional psychotherapy may still be used by some mental health counselors for test anxiety, at best, its effectiveness is extremely limited. The data are equivocal with respect to psychotherapy/counseling reducing anxiety; however, it is unequivocal in demonstrating that psychotherapy/counseling has no

effect on performance (Smith, Armkoff, & Wright, 1990). Furthermore, evidence-based research related to anxiety management indicates that behavioral and cognitive behavioral interventions have the strongest empirical support **(**Chambless, Baker, Baucom, et al., 1998**)**, with each decreasing anxiety and improving performance. Moreover relaxation training, typically using abbreviated progressive relaxation training (Bernstein & Borkovek, 1973) is a common component of either behavioral or cognitive behavioral mental health counseling intervention to decrease arousal. For example, Hudesman, Loveday and Woods (198 4) reported that systematic desensitization decreased anxiety and improved grade point average. Powell (2004) reported the effectiveness of a treatment package that included relaxation training, systematic desensitization, psychoeducation and study skills for medical students with test anxiety.

Behavioral Relaxation Training (BRT; Poppen, 1998) is a behavior analytically based procedure used for teaching 10 overt relaxed behaviors. Behavioral skill training (i.e., verbal instruction, modeling, prompting, reinforcement, shaping, and corrective feedback) is employed in acquisition and proficiency phases of training. Participants are taught 10 relaxed behaviors, each with an operational definition: head, eyes, throat, shoulders, hands, body, feet, breathing, mouth and quiet. Relaxed postures have been validated and shown to produce decreased electromyographic (EMG) activity (Poppen & Maurer, 1984). During proficiency training, participants are taught to covertly observe and discriminate interoceptive, proprioceptive, and kinesthetic stimuli produced by performance of overt relaxed behavior. For example, the client is instructed to "notice the sensations as you relax your hand in the curled, claw-like position on the arm of the chair." As in acquisition training, correct overt performance of the relaxed behavior is reinforced using descriptive praise. BRT has been used to manage tremor severity and anxiety of patients with essential tremor (ET) and Parkinson's disease (Lundervold & Poppen, 2004; Lundervold, Pahwa & Lyons, In press; Lundervold, Pahwa, & Lyons, 2006). Rashid and Parish (1998) conducted group BRT or abbreviated progressive relaxation training with high school students. Both relaxation training procedures reduced self-reported state anxiety. These authors concluded that "behavioral relaxation may actually be the more desirable of the two approaches, since it is less physically taxing in the sense that trainees do not have to tense and relax muscles routinely, as they do while they are engaging in progressive relaxation" (pp. 100).

Because of the increasing demand for accountability and evidence-based counseling outcomes (Sexton, 1999; Sexton Schofield, & Whiston, 1997; Sexton, Whiston, Bleuer, & Walk, 1997), mental health counselors must be employ counseling interventions with demonstrated effectiveness (Chambless, Baker, Baucom, et al.,1998; Wampold, Lichtenberg, & Waehler, 2002). BRT, implemented over six to eight sessions, has been shown to reduce anxiety and improve performance (Lundervold, In press; Poppen, 1998). In addition, the the relaxed behaviors are directly observable and measurable (Poppen, 1998) providing mental health counselors an opportunity to directly measure the process of behavior change functionally related to symptoms complaints. In doing so, further evidence-based care can be documented as well as identifying variables responsible for improvement in functioning. While encouraging, further research is needed to establish BRT as effective intervention for anxiety disorders. This research extends previous findings related to BRT and anxiety by examining the effect of abbreviated upright BRT on test anxiety of college-age students.

Method

Participants

Twenty (N= 10 per group), self-referred, undergraduate university students reporting test anxiety, took part. The majority of participants were Caucasian (66%) females students with the remaining sample comprised of African American females. Two African American participants were enrolled in the experimental condition and three enrolled in the control condition. Participants ranged in age from 18-40 years old. Participants volunteered to take part by enrolling in the research using an online research web

page and assigned to groups based on the session schedule posted. The research was conducted at a small Midwestern university as part of an undergraduate research course requirement.

Dependent variables

A 10-point Subjective Unit of Discomfort (SUD) rating (Wolpe, 1958), obtained in vivo, was used as an idiographic process measure of behavior change. Higher SUD ratings indicate greater subjective discomfort. A slightly revised version of the nine-item Abbreviated Math Anxiety Scale (Hopko, Mahadevan, Bare, & Hunt, 2003) was used as a generic outcome measure of test anxiety. Scores could range from 9-45 with higher scores indicating greater test anxiety. The original math anxiety scale has excellent reliability and validity.

Independent variable

Instruction in 10 upright relaxed behaviors was conducted using behavioral skills training (i.e., direct instruction, modeling, corrective feedback, manual guidance, shaping, descriptive praise) (Poppen, 1998; Speigler & Guevremont, 2003).

Research design and analysis

A pre-post between groups quasi-experimental design was used. Independent t-tests were used to assess differences on pre test ATAS scores followed by a comparison of post test ATAS and one randomly selected SUD rating. One SUD rating was selected due to the varying number of ratings recorded as a function of the frequency of quizzes/exams.

Procedure

A senior-level, female undergraduate student in psychology, with course work in Principles of behavior and Cognitive behavioral intervention, implemented procedures and collected all data. The initial session was conducted individually. After obtaining informed consent, assignment to BRT and control group occurred based on schedule availability. All participants completed a brief demographic questionnaire and the ATAS (Time 1). Participants assigned to the control condition received instructions to make SUD ratings before an exam or quiz while in the classroom.

Participants assigned to the BRT condition received the same instruction in addition to two 30-minute sessions of abbreviated upright BRT. Upright relaxed behaviors were taught in a group setting. Acquisition training of upright relaxed behavior was conducted during the first 30-minute period using behavioral skill training followed by behavioral rehearsal (Poppen, 1998). A short break then ensued. Proficiency training was conducted during the second 30-minute period. Participants were instructed engage in the upright relaxed behaviors. The trainer then instructed participants to notice "how it feels to relax your *(behavior)* in the *(relaxed position based on the operational definition)*" with contingent corrective feedback or descriptive praise provided. At time 2 (T2) assessment, conducted one week later, all participants again completed the ATAS and returned SUD ratings obtained over the past week.

Results

Frequency of SUD ratings ranged from one to four in the interim between T1 and T2. An independent t-test on BRT and control group pre-test mean ATAS scores was non significant ($p = > .10$). An independent t-test conducted comparing mean T2 ATAS scores and SUD ratings of the BRT and control group found a significant difference between groups (ATAS: $t(15)=1.38$, $p<.05$; SUD: $t(15)=.62$, $p<.05$). Mean ATAS for the BRT group was significantly lower (m =18, sd =3.65) than the for

the control group (m = 22.4, sd = 2.84). Mean SUD rating for the BRT group was also significantly lower (m = 4.4, sd = 2.37) compared to the control group (m = 6.7, sd =1.57).

Discussion

Test anxiety among college students is a prevalent maladaptive response that can have deleterious effects on emotional as well as academic performance. Upright abbreviated BRT was found to be effective reducing test anxiety using outcome (ATAS) and process measures (SUD rating). Results replicate and extend past research on BRT. Rashid and Parish (1998) reported the benefits of four sessions of upright BRT with high school students. Unfortunately, these students did not report test anxiety, but were merely recruited to take part in a relaxation study. Analog studies of this type have limited generality to actual clinical populations. Participants in our study reported a clinically meaningful degree of distress on two measures of test anxiety. Positive effects of BRT were obtained in two sessions. The brevity and effectiveness of BRT in a group setting are very encouraging for its use in managing test anxiety among college students. These results also replicate and extend the findings of Lundervold et al (In press) demonstrating that BRT is effective in reducing anxiety among neurologically and non-impaired individuals.

The brief period between T1 and T2 limits statements about the durability of upright abbreviated BRT for managing test anxiety. Furthermore, the modified ATAS, though based on a math anxiety questionnaire with excellent reliability and validity, has no demonstrated psychometric characteristics. It is possible that ATAS results are unreliable; however, between group SUD ratings, an idiographic measure of the process of behavior change, were significantly different. This finding supports ATAS results. Further research establishing the psychometric properties of the ATAS is needed. Replication of the effect of abbreviated upright BRT for test anxiety using larger samples, direct measure of relaxed behavior and assessment of academic change also is needed.

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