Reducing Subclinical Symptoms of Anxiety and Depression: A Comparison of Two College Courses

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Abstract

Mental health has been declining among college students in recent years. Reports indicate that even subclinical symptoms of anxiety and depression can negatively influence life satisfaction and performance. Mental health experts are calling for more efforts to address these concerns among college and general populations. This study examined the effect of two, 15-week courses for reducing anxiety and depression symptoms in functional college students. Twenty-seven participants in a mental health skills course practiced cognitive-behavioral, relaxation, and lifestyle skills. Eighty-six participants in a conventional stress management course were taught stress theory and practiced relaxation and lifestyle skills. The Spielberg Trait Anxiety Inventory and the Beck Depression Inventory II were used to assess the students' mental health before and after the intervention. An analysis of covariance at posttest revealed significantly greater reductions in anxiety and depressive symptoms among participants in the mental health skills course. Success with the cognitive-behavioral approach used in the course lends support for the recommendation that educators be trained to adapt some of these skills to classroom settings. Additional research is needed to isolate the most powerful components of the course.

Anxiety and depression have increased among college students in recent years (American College Health Association [ACHA], 2002; Twenge, 2000). According to reports, 10 percent of college students have been diagnosed with depression (ACHA, 2002) and nearly 7 percent report anxiety disorders (National Mental Health Association [NMHA], 2002). These rates are similar to 1-year prevalence in the U.S. adult population at large: anxiety 13–18%; and mood disorders 7–11% (Kessler et al., 1994; Regier et al., 1993). Moreover, students report that subclinical symptoms can also impact life satisfaction and performance. For example, nearly one-third of college freshman say they are "frequently overwhelmed by all they have to do"; this is

up from 16% in 1985 (Sax, Astin, & Korn, & Mahoney, 1999). Further, 38% of college students report they are "so depressed it's difficult to function" (ACHA, 2002). Eighty-four percent of campus counseling center directors believe anxiety and depression have increased among college students in recent years. Unfortunately, many of these centers are overburdened, and 82% have responded by directly setting or otherwise encouraging limits on the number of sessions per student (Gallagher, 2001).

Mental health has become an important public health concern for college campuses specifically and for U.S. adult populations generally. It has been shown to predispose individuals to poor physical health and cause unnecessary suffering for them and

their families (Friedman & Booth-Kewley, 1987; Kessler et al., 1994; Regier et al., 1993). Mental health related costs in the United States are estimated to total hundreds of billions of dollars annually, including direct and indirect medical care, disability, and lower productivity (Lecrubier, 1998; Substance Abuse and Mental Health Services Administration [SAMHSA], 1994; Department of Health and Human Services

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[DHHS], 1999). This suffering and expense is a tragedy because research clearly demonstrates the efficacy of the treatments currently available (DHHS, 1999; SAMHSA, 1994).

Leading government, education, and professional groups have called for more efforts to address these concerns. The appeals fall in three primary areas: (a) research and teach methods for preventing mental illness; (b) remove stigmas that can hinder some individuals from seeking treatment; and (c) deal with insufficient access to effective treatments, which is due not only to inadequate insurance coverage, but also to a shortage of trained professionals for some segments of the population (Albee & Gulotta, 1986; DHHS, 1999; Kessler et al., 1994).

The first two appeals specifically refer to efforts that could (a) identify risk factors for mental health problems, (b) develop preventive interventions to block the emergence of more severe illness, and (c) teach good mental health (DHHS, 1999). It has been reasoned that some relief from subclinical symptoms could be provided through better training for self-treatment and prevention (Schiraldi, Spalding, & Hofford, 1998). In this regard, the Surgeon General (DHHS, 1999) contends that some common events during periods of life transition can create mental health problems (which do not necessarily become disorders) that could be addressed through a variety of interventions. Time in college is often considered one of these periods of life transition.

The third appeal, improving access to mental health assistance, may require original thinking. Albee and Gullotta (1986) noticed this problem some years ago and suggested the following.

Two strategies that exist for resolving our shortfall make sense. The first of these is to find alternatives to one-to-one intervention provided by highly trained professionals. The second strategy is to put more effort into primary prevention. We must recognize the fact that no mass disorder affecting large numbers of human beings has ever been controlled or eliminated by attempts at treating each affected individual. This is not only sound public health doctrine, but it is as applicable to the field of mental health as it is to the field of public health (p. 217).

Of treatments shown to be effective for mental illness, psychotherapy could most easily be adapted to provide the widest range of public health application. This is because it can be given preventively, does not require medical training, and versions of it can be delivered by nonclinical professionals. There is some evidence that small group, educational approaches may partially satisfy the recommendations for teaching preventive skills, removing stigmas, and reaching a larger number of those in need (Kanas, 2000; Yalom, 1995).

The classroom-based, cognitive-behavioral (CB) approach recommended here is relatively simple, yet powerful. If students can be taught to recognize and replace irrational thought patterns, they may be more likely to avoid or minimize certain mental health setbacks. If they are also taught behaviors that can help them stay in good physical health and cope with potential stressors, they may also be better prepared to deal with some of the symptoms of anxiety and depression.

Some have argued that the critical need for managing stress and improving mental health can be partially met through educational resources (Schiraldi et al., 1998). The college environment may be ideal for discussing many of the issues related to mental health while individuals are in their formative years. Although several approaches to prevention in early childhood have been tried, creative approaches to preventive psychology in the college community have been less studied (DeArmond & Marsh 1984). This may be partially due to the belief that mental health skills can only be effectively taught by licensed counselors. However, evidence suggests that under many conditions, paraprofessionals can be trained to deliver limited versions of CB therapy (Christensen & Jacobson, 1994).

Deckro and colleagues (2002) recently identified three credible studies in college populations that taught CB techniques alone or in combination with relaxation to reduce symptoms of mental illness. These studies, while demonstrating improvement in anxiety, depression, or distress, were limited to students of particular majors. Deckro and associates expanded on this work by showing similar changes in anxiety and stress in a more general college population (Deckro et al., 2002). In six sessions they taught four cognitive and six relaxation skills. Students practiced the relaxation skills individually. Our goal was to expand on previous research: (a) teaching a wider variety of skills; (b) allowing for multiday individual practice of each CB skill in addition to the practice of relaxation skills; (c) delivering the skills in the form of a full-semester course (30 sessions); and (d) measuring the effect of the two interventions on subclinical symptoms of both anxiety and depression.

METHOD

Procedure

This study (which was approved *a priori* by departmental and university institutional review boards) was designed to test the efficacy of two college courses for reducing subclinical symptoms of depression and anxiety. The mental health skills group (CB) consisted of all willing participants in the two sections of the mental health skills course. The course was advertised to address the mental aspects of stress. Each section was limited to 14 students. Previous experience has shown that beyond this number the integrity of small-group interaction is likely to break down (Schiraldi & Brown, 2002). Participants in this course learned and practiced three relaxation skills and several CB skills shown to be effective in clinical settings. For instance, one staple of CB therapy is a three-column technique, in which participants practice noticing, analyzing, and refuting their own irrational, automatic thoughts. For example, a participant who never goes on dates may get depressed because he thinks of himself as a loser. The participant would first catch

Figure 1. Skills Taught in Class and Practiced Individually

Mental Health Skills Course (CB Group)

Lifestyle Training	Relaxation-Response Skills	CB Interventions
- meal planning - exercise prescription - sleep hygiene	- diaphragmatic breathing - progressive muscle relaxation - guided imagery - pleasant event scheduling - identifying core beliefs - hostility reduction - gestalt exercises - forgiveness experiences - worry analysis - worry periods (Borkovec, 1983) - confiding secret wounds (Pennebaker, 1997) - competency imagery - viewing worth truthfully - reappraising self-esteem distortions - self-esteem affirmations - traumatic experience corrective imagery - inventory of personal moral strengths - relapse prevention	- mental health treatment options - bi-weekly journaling - identifying automatic thoughts - challenging cognitive distortions

Conventional Stress Management Course (Stress Group)

Lifestyle Training	Relaxation-Response Skills	CB Interventions
- meal planning - exercise prescription - sleep hygiene	- diaphragmatic breathing - progressive muscle relaxation - guided imagery - pleasant event scheduling - meditation - autogenic training - yoga	- mental health treatment options

himself thinking this way, then analyze what he means by "loser," then consider evidence that disputes his initial conclusion, and finally develop a less negative, more rational, self-statement. The topics discussed were grouped in four categories of mental health challenges: anxiety, depression, low self-esteem, and anger. The course also required semi-weekly journaling of feelings and coping experiences. Additionally, participants contracted for 20 minutes of aerobic exercise most days, three nutritious meals daily, and sufficient rest daily (Figure 1).

The conventional stress management group (STRESS) consisted of all willing participants in two sections of a stress management course. Students in this course experienced a conventional stress management curriculum including a survey of the stress models; the psychophysiology of the stress response; time management; goal setting; relaxation theory; relaxation technique practice; exercise; nutrition; and sleep. During the semester of the study, students did not receive instruction on any CB models or practice any CB skills (Figure 1). Both the CB course and STRESS course met 2.5 hours weekly for 15 weeks.

Participants Included in Group Analyses

Participants were college men and women of various majors registered for health education courses at a large public university. To be eligible, participants had to be 18 years or older, read English, have permission to register for the courses from which the samples were drawn, and sign informed consent. To test the skills used in this educational intervention, the treatment and control groups had to be classroom based. The groups were students who registered for the classes from which the samples were drawn.

Participants who reported receiving mental health services (counseling or medication) outside the study at pretest or posttest were excluded from the analysis, because the goal of this study was to reduce subclinical symptoms in a functional

population. Additionally, receiving outside therapy may unevenly affect the results or bias the participants to the study instruments, which may be identical or similar to those used in therapy. Five in the CB group and 15 in the STRESS group reported receiving some type of therapy. Also, one outlying participant in the STRESS group, who had scores that were more than three standard deviations from the mean on either measures (STAI=3.1 and BDI-II=4.7 standard deviations from the mean), was also excluded from group analysis. This student may have had undiagnosed clinical anxiety and depression.

Measures

The State-Trait Anxiety Inventory (STAI) is a 20-item self-report instrument designed to measure general anxiety proneness. Six-month test–retest reliability for male and female college students has been reported as 0.73–0.77 (Spielberger, 1983). The STAI correlates highly with other anxiety measures such as the IPAT Anxiety Scale (0.75) and the Taylor Manifest Anxiety Scale (0.80) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1996). In this study, Cronbach alpha reliability coefficients ranged from 0.74 to 0.76.

The Beck Depression Inventory II (BDI-II) is a paper instrument often used by clinical psychologists. Its 21 items assess intensity of depression in clinical and normal patients. It has high clinical sensitivity, with an alpha reliability of 0.92 (Beck, Brown, & Steer, 1996). The manual provides the following guidelines for diagnosis: 0–13=minimal depression, 14–19=mild depression, 20–28=moderate depression, and 29+ severe depression. A study using the BDI-II in a similar group of college students found a mean of 4.9 and standard deviation of 4.5 (Barrick, 1994). In this study Cronbach alpha reliability coefficients ranged from 0.91 to 0.92.

In addition, participants supplied general demographic information such as age, gender, ethnicity, and educational profile. They also completed self-esteem and anger scales not reported here. All the measures were completed twice by all participants: once during the first week of class and again during the last week and a half of class.

Analysis

To strengthen this nonequivalent group design, both groups were also measured at pretest. These pretest measures were used as covariates in the analysis. Therefore, this study had one independent variable (type of classroom intervention) with two groups: (1) CB group, and (2) STRESS group.

Frequency data were calculated for all categorical, demographic variables including personal variables (gender, age, and ethnicity), and schooling-related variables (part- or full-time student status, working status, grade level, and major). In addition, a pair of questions was used to determine whether students were receiving extra-intervention counseling or medication at pretest or posttest. Differences between the groups were obtained by analysis of covariance on the posttest scores, using the pretest score as a covariate control (Cook & Campbell, 1979; Garson, 1998). Each individual pretest score was also weighted by the alpha coefficient to further reduce measurement error (Trochim, 1999).

RESULTS

Baseline

Twenty-eight students registered for the CB course, and 1 student dropped early in the course. The remaining 27 students (100%) agreed to participate in the study and completed the pretest. No students in the CB group were lost to follow-up at posttest. One hundred and twenty-one students registered for the stress management course. Eighty-six (70%) agreed to participate in the study and completed pretests. Fourteen in the STRESS group were lost to follow-up due to dropping the course, not recording the correct identification number, or absence when the posttest was given. At pretest those lost to follow-up did not differ statistically from those who were not lost to follow-up on any demographic variable or on either outcome measure.

The majority of the participants (95%) in either group were between the ages of 18 and 25, and 59% were women. The total ethnic profile was as follows: 61% White, 19% Black, 13% Asian, 4% Hispanic, and 3% all others. The majority of participants (96% of each group) were full-time students.

At the onset of the study, the groups did not significantly differ in age, gender, ethnicity, academic major, amount of time working, or therapy participation. The STRESS group had slightly fewer upperclassmen than the CB group (i.e., 62% juniors/seniors vs. 89%). The STRESS group also had slightly higher anxiety and depression scores at baseline (Table 1). As anticipated, the majority of the participants in either group (91% of CB, and 78% of STRESS) reported minimal depression (<14). Further, means for anxiety symptoms were not significantly different from college norms for each group.

	CB				Stress					
	Pre (*n*=22)		Post (*n*=22)		Pre (*n*=56)		Post T (*n*=56)			
Measure	M	SD	M	SD	M	SD	M	SD	*F*	*p*
STAI	35.5	9.8	31.6	6.5	40.1	10.6	39.1	9.3	9.00	<.01
BDI-II	6.3	6.5	4.1	4.1	10.1	8.1	9.9	7.7	7.05	<.01

Table 1. Analysis of Covariance Between CB and STRESS Groups at Posttest: State-Trait Anxiety Inventory (STAI) and Beck Depression Inventory II (BDI-II)

Note: Participants with extra mental health services participation were excluded from analysis.

Posttest Comparison

Table 1 shows the comparison between the CB and STRESS groups. By the end of the semester the mean for anxiety symptoms in the CB group was 31.6 (SD=6.5), whereas the mean in the STRESS group was 39.1 (SD=9.3). Anxiety symptoms were significantly lower in the CB group at posttest [F (1, 76)=9.00, p<.01]. The posttest mean for depression symptoms in the CB group was 4.1 (SD=4.1). This was also significantly lower than the posttest mean in the STRESS group of 9.9 (SD=7.7) [F (1, 76) = 7.05, p<.01].

DISCUSSION

Group Changes

The fact that the CB group had reductions in anxiety and depressive symptoms and the STRESS group did not, even when the STRESS group had more room for improvement (higher pretest scores), supports the reasoning that the approach used in the CB group was measurably more effective than the one used in the STRESS group. This finding has practical significance because parts of the CB and STRESS interventions are similar. For example, both taught relaxation skills including progressive muscle relaxation and imagery, and both emphasized the importance of proper diet, exercise, and sleep. The difference between the two groups is hypothesized to be due to the unique attributes of the CB group intervention. These attributes are assumed primarily to be the small group discussion format and the CB skills unique to the CB group (Figure 1).

One explanation for slightly higher pretest scores in the STRESS group is the belief that some who self-select to a stress management course do so because they are experiencing symptoms of distress and hope the class will teach them something to reduce these symptoms. However, this same rationale (desire to lower stress and improve mental health) could also be applied to the CB group, which was also advertised as a type of stress management course. Additionally, any nonequivalent group design has some pretest differences between the groups, and using the pretest scores as a covariate in the analysis sufficiently adjusts for these pretest differences.

Participants Seeking Clinical Therapy

At pretest, 11% of the CB group and 14% of the STRESS group were receiving medication or counseling outside of class. These proportions are similar to the U.S. adult population average (Kessler et al., 1994; Regier et al., 1993). Self-selection does not appear to be the best explanation for differences in therapy participation across the length of the semester. During the course of the intervention no therapy participants in the CB group ceased therapy, whereas two more (8% of the group) started therapy. Six of the 10 therapy participants in the STRESS group ceased therapy during the intervention, but another 6 (8% of the group) began therapy during the study. These findings appear to support the belief that the interventions in the CB and STRESS groups, both of which also included discussions of mental health service options, motivated a percentage of the participants in these groups to begin clinical therapy.

CONCLUSION

The results are promising and point to the need to further investigate classroom settings as means of teaching mental health skills to reduce current, subclinical symptoms and potentially to prevent future symptoms. Further effort should attempt to differentiate the effect of each of the unique components of the mental health skills course: (1) the effect of small group interaction, (2) the effect of the individual skill practice for each category of mental health, and (3) the effect of the lifestyle behaviors contract. This type of analysis would allow the program to be refined to its most powerful components, which could then be delivered in a shorter, more cost-effective manner.

The findings may also have implications for current health education practice. Specifically, health educators should consider enhancing their current stress management courses or mental health units by applying some of the unique components identified in this study. Instructors should consider delivering instruction in smaller classes or finding creative ways to simulate the effect of small group interaction. For example, they can build trust and increase willingness to share and discuss problems by keeping the same students in the same small groups and by occasionally allowing sufficient time to analyze personal problems in these small groups. Another easy addition is replacing some of the homework in a course with assignments that require individual skill practice for prolonged periods (i.e., a few weeks). One way to do this is by structuring the assignments as experiments with a subject of one (the student). Instructors also should consider adding skills that have been shown to be effective in clinical practice. Although some skills used in clinical settings require extensive training, others are relatively simple and conducive to classroom demonstration and individual practice. If they are not already using them, instructors should also consider contracts as another way to increase the likelihood of practicing behaviors that support mental health.

Another improvement would be a research design with random assignment. Such a design would require participants willing to be assigned to either of two programs for the length of the study. Because this procedure is often not possible in classroom settings where courses are offered for credit, an alternative population would have to be tested. Although such a design may address nonequivalence, it would limit generalizability to classroom settings. Alternatively, a randomized-group design could be used. This would require numerous, relatively equivalent, intact groups willing to receive either of two standardized treatments and enough educators trained to deliver them.

The effect of this approach on more troubled groups cannot be demonstrated from these studies. However, it is generally believed that those who present the greatest symptomatology usually show the most improvement. To demonstrate this effect, the intervention would have to be tested

on groups specifically recruited for their poor mental health. There is ample evidence supporting the use of most of these skills on individuals in clinical settings, and the goal of this study was to reduce subclinical symptoms in small groups in a functional population.

Another recommendation is to have participants in each group complete the same instruments several months or years after the initial intervention to determine whether the intervention has lasting effects. If this could be consistently demonstrated, the classroom may also prove a potential avenue for teaching preventive mental health.

Considering the growing need for mental health services on college campuses and in other underserved segments of the population, the approach outlined in this study deserves further investigation as a cost-effective strategy for treatment of subclinical mental health symptoms. Although the effects in this study were not as strong as those in previous pilot studies, participants in CB groups have consistently demonstrated improvement (Schiraldi & Brown, 2001). It should be noted that significant reduction in a group mean implies that some individuals in the group are experiencing greater than average changes. Even small changes in trait measures, which are considered relatively stable, can be acutely perceived by individuals. For instance, during the last day of the mental health skills curriculum, the students are invited to discuss their experiences with the intervention. These debriefings are dominated by the students' glowing approbation for the experience and by the sharing of personal growth or "breakthrough" experiences. In total, the findings are promising and lend support for Albert Ellis' recommendation that educators be trained to teach these skills (Dyden & Ellis, 1988). Specifically, they should consider the introduction of applicable CB skills into conventional stress management curricula and mental health units.

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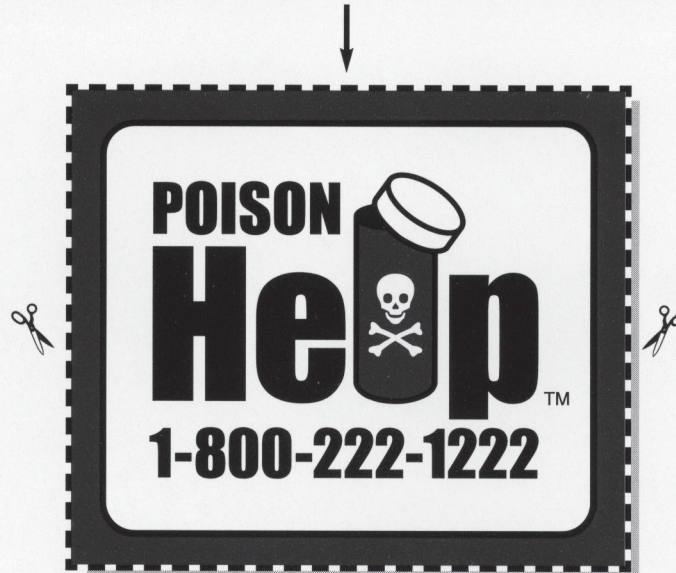Substance Abuse and Mental Health Services Administration. (SAMHSA). (1994). *Cost of addictive and mental disorders and effectiveness of treatment* (DHHS Pub. no. ADM-94-2096). Rockville MD: U.S. Department of Health and Human Services.

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