Effects of Coping Skills Training on Generalized Self-Efficacy and Locus of Control

Ronald E. Smith
University of Washington

A number of studies have shown that mastery experiences strengthen self-efficacy expectancies that are specific to the mastery situation. In this study I assessed the effects of cognitive-behavioral coping skills training on generalized expectancies concerning self-efficacy and locus of control in test-anxious college students. Compared with a waiting-list control group, the trained subjects exhibited significant decreases on trait and state measures of test anxiety and a higher level of academic performance on classroom tests, as well as changes in specific self-efficacy expectancies relating to test-anxiety management and academic performance. Consistent with generalization predictions derived from self-efficacy theory, the coping skills group also exhibited decreases in general trait anxiety and increased scores on a trait measure of generalized self-efficacy. Locus of control was unaffected by the program, and changes in general self-efficacy were unrelated to changes in locus of control, suggesting the possibility that different parameters of experience are related to changes in the two types of generalized expectancies.

It is widely acknowledged that cognitions relevant to personal control play a major role in both psychological adjustment and physical health (Bandura, 1986, in press; Lefcourt, 1981, 1982; Strickland, 1978; Taylor & Brown, 1988). Constructs relating to personal control expectancies, such as locus of control (Rotter, 1966), self-efficacy (Bandura, 1986), and secondary appraisal (Lazarus & Folkman, 1984) occupy prominent positions in contemporary theoretical formulations of coping and behavioral efficacy.

The adaptive significance of expectancies concerning personal control has stimulated interest in conditions that influence their development and in measures that may be taken to enhance subjective feelings of control. For example, Bandura (1986) has reviewed a large body of empirical evidence that perceived self-efficacy (beliefs in one's capabilities to execute required behaviors) facilitates adaptive behavior and helps to mediate constructive behavior change. Among the conditions that alter self-efficacy, the most influential is assumed to be mastery experiences that convey to the person that he or she has an effective repertoire of behaviors. Increases in self-efficacy are most likely to occur as a result of self-observations of improved performance and the perceived development of coping skills with which to meet future situations (Bandura, 1977).

Bandura (1977, 1986) suggested that self-efficacy expectancies vary along three major dimensions: magnitude (i.e., the relative difficulty of task demands); strength (i.e., resistance to disconfirming experiences); and generality (i.e., the relative degree of specificity or pervasiveness of expected mastery). Most research on self-efficacy has focused on the magnitude and strength dimensions, and the extent to which self-efficacy expectancies generalize to other situations has received less empirical attention. In one study, Bandura, Adams, Hardy, and Howells (1980) demonstrated that coping behaviors learned in one situation generalized to community settings that were similar, suggesting that self-efficacy gained from mastery in one situation generalizes to other similar situations. However, no attempt was made to assess generalization to dissimilar situations. Other studies have shown that situation- and task-specific self-efficacy expectancies are better predictors of successful behavior in those situations than are general measures of perceived personal control (Kaplan, Atkins, & Reinsch, 1984; Manning & Wright, 1983). Nonetheless, the desirability of helping people develop generalized feelings of self-efficacy, which have been shown to correlate highly with self-esteem (Coppel, 1980), has been noted by a number of authors (e.g., Bandura, 1986; Goldfried & Robins, 1982; Lazarus & Folkman, 1984; Marlatt & Gordon, 1985).

Generality of self-efficacy expectancies should be maximized when people gain coping skills that can be successfully applied within a wide range of situations. Many cognitive-behavioral coping skills programs are designed to facilitate acquisition of such skills (D'Zurilla & Nezu, 1982; Meichenbaum, 1985; Smith, 1980). Although skills training in such programs is frequently oriented toward helping people cope more effectively with specific problematic situations, the skills that are acquired may be regarded as general life skills that can be applied to a...
wide range of situations. Specific measures may be taken to fa-
cilitate internal attributions for the outcome of the training, re-
sulting in self-attributed positive changes that increase further
the likelihood of a resultant increase in general self-efficacy
(Goldfried & Robin, 1982). To this point, however, the extent
to which coping skills programs result in generalized self-effi-
cacy has not been established.

Another construct that bears some degree of conceptual over-
lap with general self-efficacy is internal versus external locus of
control (Rotter, 1966). The Internal-External (I-E) Scale is
assumed to measure a generalized belief concerning the extent
to which people have control over reinforcement and punish-
ment. The I-E Scale differs from self-efficacy measures in that
only a subset of its items refer directly to the subject’s behavioral
capabilities. Nonetheless, a number of studies have reported
significant shifts toward an internal locus of control in subjects
who were exposed to interventions designed to help them ac-
quire new behavioral competencies. For example, Smith (1970)
found that patients who underwent life crisis counseling geared
toward the development of new coping skills became more in-
ternal. Studies involving other skills programs, such as biofeedback
training (Stein & Wallston, 1983) and problem-solving inter-
tervention (Duckworth, 1983), have elicited similar shifts, al-
though not invariably (see Lefcourt, 1981; Strickland, 1978).
Previous positive findings with the locus of control variable sug-
gest the possibility that coping skills training may result in in-
creases in general self-efficacy as well as shifts toward a more
internal locus of control. Indeed, one could expect a greater
likelihood of gains in general self-efficacy than in locus of con-
trol to the extent that the self-efficacy measure is explicitly ori-
tated toward the measurement of perceived behavioral capa-
bilities.

In this study, college students suffering from high test anxiety
were trained in an array of self-regulation and environmental
management skills. Following Bandura’s (1977) emphasis on
the importance of presenting training in a manner that encour-
ages subjects to use “self-directed mastery to strengthen and
generalize expectations of personal efficacy” (p. 202), the pro-
gram emphasized personal responsibility for coping skills ac-
quision, as well as frequent reminders that the skills could be
applied to a range of life situations. In addition to evaluating
treatment effects on the targeted variables of test anxiety and
academic performance, I assessed generalization effects of the
program on trait anxiety, generalized self-efficacy expectancies,
and internal–external locus of control. On the basis of the pre-
sumed role of mastery experiences in the development of per-
sonal control expectancies, I predicted that increases in self-
efficacy and shifts toward a more internal locus of control would
be related to decreases in anxiety and increases in academic
performance for subjects who were trained in coping skills.

Method

Subjects

The subjects were 42 college students selected from an initial pool of
452 students enrolled in an introductory psychology class. Subjects met
the following criteria: (a) scored in the upper quartile of the Test Anxiety
Scale normative distribution for college students (Sarason, 1978); (b)
wished to participate in a test-anxiety reduction program; (c) agreed to
attend all data collection and training sessions and were available at the
times the sessions were scheduled; (d) gave written consent for investiga-
tor access to pertinent academic records; (e) had never been trained in
relaxation or meditation; (f) had not participated previously in any test-
anxiety reduction training; and (g) were not currently involved in any
other counseling.

Subjects were randomly assigned to either a coping skills training con-
dition or a waiting-list control condition, each containing 14 women
and 7 men. During the course of the study, 4 subjects were lost from
the training condition and 2 from the control condition because they missed
two or more training sessions, failed to complete the posttreatment
measures, or left school, resulting in a final sample of 17 trained and 19
control subjects.

Procedure

The coping skills training program consisted of five 60-min group
sessions conducted on a biweekly basis during the 5th through 7th weeks
of the academic quarter by a doctoral-level trainer who was not associ-
ated with the psychology course the students were taking. The program
was presented as an educational program designed to expose students
to a wide range of coping skills that have been shown to be effective in
reducing test anxiety and its negative effects on performance. A different
printed module of self-instructional and homework materials was given
to subjects during each session. They were required to complete and
hand in the homework assignments, which allowed for monitoring of
their reading and practice of the skill-acquisition materials. The trainer
emphasized to subjects throughout the program that whatever gains
they achieved would be a direct result of their commitment and efforts
in learning and applying the procedures. The group sessions consisted of
a didactic overview of that session’s training materials and a group
discussion of subjects’ experiences in practicing and applying the vari-
ous procedures; their purpose was to encourage and monitor subjects’
use of the self-help materials.

During the initial session, the nature of test anxiety was presented in
terms of its situational, cognitive, affective, and behavioral components
(Smith, 1980). During each of the subsequent sessions, the specific tech-
niques and coping procedures in the coping skills modules were related
to the situational, cognitive, affective, and behavioral components of the
model to provide a meaningful framework. Situational and behavioral
procedures included time management, goal-setting, stimulus control,
and effective study techniques. These were designed to enhance personal
control over the study environment, to teach subjects to manage time
and resources more effectively, and to reduce stress created by procrasti-
nation and lack of preparation.

Cognitive coping strategies included a cognitive restructuring compo-
nent derived from Goldfried, Linehan, and Smith (1978), as well as self-
instructional statements to be applied within the test situation
(Meichenbaum, 1972). Subjects also received training in the use of
covet self-reinforcement and self-encouragement procedures to
strengthen the use of other intervention measures. Finally, instruction
was given in using mental imagery to rehearse ways of dealing with bar-
rriers to studying and to practice coping responses to be used in the test
situation itself.

At the affective level, subjects were given written instructions for re-
lexation training to control physiological arousal. This training was later
applied within a self-desensitization program involving a personally
constructed test-anxiety hierarchy. The self-control variant of desensiti-
zation (Goldfried, 1971) was used, and subjects were encouraged to gen-
erate anxiety responses by imagining test situations, then to control the
affective response through relaxation. Subjects were also taught several
deep-breathing procedures to control affective arousal, as well as Ben-
son’s (1975) meditation technique as a general stress-reduction and self-
rejuvenation strategy.
Measures

Subjects completed a pretreatment and posttreatment assessment battery of outcome measures consisting of Sarason’s (1978) Test Anxiety Scale (TAS), the Trait form of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), the Internal-External (I-E) Scale (Rotter, 1966), and the Self-Efficacy Scale (Coppel, 1980). The Self-Efficacy Scale is a 22-item scale designed to assess the general expectation that one is able to successfully execute behaviors that are required to produce desired outcomes. Sample items include the following: “Once I know what I need to do, I can do it”; “In a new situation, I expect I can handle things”; and “When I’m stressed, I can count on myself to cope successfully.” Each item is rated on a 5-point scale ranging from not at all like me (1) to very much like me (5). The scale has been shown to have adequate internal consistency (Cronbach’s alpha = .91) and a test–retest reliability of .86 over 2 weeks (Coppel, 1980).

I measured self-efficacy expectancies specific to the goals of the coping skills program using a questionnaire administered to the subjects in the training condition prior to and following completion of the program. Subjects were asked to rate on 10-point scales (a) how useful they believed the coping skills program would be in dealing with their test anxiety in future test situations and (b) the degree of improvement in future academic performance that they expected as a result of their acquisition of the coping skills. Comparison of the pre- and posttraining ratings provided a measure of changes in self-efficacy specific to dealing with academic and test situations.

In order to measure anxiety experienced in actual test situations, subjects in the treatment and control groups completed the State form of the STAI immediately prior to taking weekly tests in the psychology class from the 5th through 10th weeks of the academic term. The state anxiety measure was attached to the first page of the subjects’ test booklet.

Several measures of academic performance were available. The measure considered to be the most sensitive measure of improved performance as a function of participation in the program was the scores on the weekly tests, because they were taken by all subjects. Also available were academic grade point averages for the quarter preceding the study (the quarter in which the study was done) and the following academic quarter.

Results

Mean pre- and posttreatment scores for the treatment and control groups on the test-anxiety and generalization self-report measures are presented in Table 1. Because no significant differences between men and women were found on any of the pre- or postmeasures, I combined data for the two genders in all subsequent analyses.

A preliminary multivariate analysis of variance of the pretreatment scores indicated no initial group difference on this set of measures. Because change scores on several of the measures were found to be correlated significantly with the pretreatment scores, I used analysis of covariance (ANCOVA), with the pretreatment score serving as the covariate and the posttreatment score as the dependent variable. In the case of the pre-examination state anxiety measure (which was available only from the beginning of the study to the end of the academic term), the mean score obtained during the 4 weeks following training served as the dependent variable and the mean state anxiety score obtained during the 3 weeks of training served as the covariate.

An initial multivariate analysis of covariance of the variables in Table 1 indicated a highly significant group difference on the total matrix of posttreatment outcome scores (Wilks’s lambda = .713, p < .001). The follow-up ANCOVA analyses revealed significant training effects on both the trait and state measures of test anxiety. Relative to the control group, the trained subjects exhibited significant decreases on both the TAS, F(1, 33) = 10.54, p < .003, and on the state anxiety STA1 measure obtained in the actual test situation, F(1, 33) = 11.31, p < .002. Relative to the control group, the subjects exposed to the anxiety control strategies exhibited a significantly greater decrease in general anxiety as measured by the STA1 Trait scale, F(1, 33) = 5.69, p < .03.

Turning to academic test performance, an ANCOVA of the mean weekly test score following training, using pretraining mean score as the covariate, revealed a significant difference between the coping skills and control groups, with the coping skills group performing at a higher level (M = 2.70 and 2.41, respectively), F(1, 33) = 7.16, p < .02. The trained subjects also earned slightly higher grade point averages than did the controls during the academic term in which they participated in the program and during the following academic term, but no significant differences were found on these measures.

Within the coping skills group, a significant relation was found between pre- and posttraining change scores in test anxiety and academic performance, with decreases in TAS scores being associated with improvements in weekly test performance, r(15) = .51, p < .04. Within the control group, on the other hand, no corresponding relation was found between test-anxiety reduction and examination grade improvement.

Analysis of the questionnaire data relating to specific self-efficacy changes within the coping skills group indicated significant increases in subjects’ expectancies concerning their future ability to cope with test anxiety and to perform better academically. On the item concerning future ability to manage test anxiety, the group mean increased from 5.31 (SD = 2.02) at pretraining to 7.62 (SD = 1.09) following completion of the program, t(15) = 2.98, p < .01. Likewise, trained subjects’ expectancies for improved future academic performance increased from 4.62 (SD = 1.82) to 6.44 (SD = 1.41), t(15) = 2.64, p < .02. Changes in specific self-efficacy as defined by these two measures correlated .41 and .35 (p < .10, two-tailed), respectively, with change on the general self-efficacy measure.

Turning to the generalized expectancy variables, a significant effect of coping skills training was found for self-efficacy, but not for locus of control. As shown in Table 1, the coping skills group exhibited an increase in Self-Efficacy Scale scores, whereas the control group showed little change. This difference was significant, F(1, 33) = 6.44, p < .02. No significant group differences occurred on the I-E Scale.

Finally, I assessed separately relations between changes in general self-efficacy and locus of control and changes on the anxiety and academic performance outcome measures within the coping skills and control groups, using pre- and posttraining change scores as correlates. As predicted, for the subjects trained in coping skills, increases in self-efficacy following completion of the program were significantly correlated with prepost reductions in TAS scores, r(15) = .45, and in STA1 trait anxiety, r(15) = .46, p < .05, one-tailed. Increases in self-efficacy were not significantly related to any of the other outcome measures, although the correlation with grade point improve-
ment ($r = .37$, $p < .10$, two-tailed) approached significance. Changes in locus of control were unrelated to any of the other outcome measures, including self-efficacy ($r = .11$). Within the control group, no significant relations were found between improvement scores on any of the outcome variables.

Discussion

The results indicate that structured training in coping skills resulted in positive changes on trait and state measures of test anxiety and on the major measure of academic performance. This result is consistent with other reports of test-anxiety reduction through cognitive-behavioral interventions (e.g., Deffenbacher & Hohnloser, 1981; Wise & Haynes, 1983). Although the program was heavily oriented toward test-anxiety reduction, a significant reduction in general trait anxiety also occurred. It is generally assumed that coping skills such as relaxation, cognitive restructuring, and adaptive self-instructions are generalizable to a wide range of anxiety-arousing situations (Meichenbaum, 1985; Smith, 1980), and the improvement in general trait anxiety exhibited by the trained subjects is consistent with such an assumption.

Within the group trained in coping skills, decreases in test anxiety were significantly correlated with improvements in test performance and increases in general self-efficacy. Reductions in general trait anxiety were also related to increased self-efficacy. The finding that these relations occurred only in the trained group suggests that the training produced its intended effects on the outcome measures. The lack of significant correlations in the control group also is likely to reflect a restricted range of change scores. The finding that test-anxiety changes, but not trait anxiety improvements, were related to improved academic performance was attributable to the greater relevance of test anxiety to the criterion test-taking situation. Finally, performance improvement among trained subjects occurred in the psychology course, but not on the more general measure of overall grade point average. The former was considered to be a more reliable index of achievement, because all subjects took the same tests. Grade point average reflects in part heterogeneous courses and appeared to exhibit considerable intra-subject variability in these subjects, most of whom were college freshmen. This may be a major reason why previous anxiety-reduction studies using grade point average as the performance outcome measure have yielded highly inconsistent results.

Of major interest were the effects of coping skills training on generalized personal control expectancies. The significant increase in scores on the specific self-efficacy items relating to coping with test anxiety and future academic performance and on the Self-Efficacy Scale indicates that exposure to the training program increased the subjects' confidence in their coping skills and, beyond that, in their general behavioral effectiveness. Moreover, as predicted, the magnitude of increase in general self-efficacy was significantly related to decreases in test anxiety and STAI trait anxiety among the trained subjects. The predicted relation between self-efficacy gains and academic performance improvements was not confirmed, although the correlation approached significance. Whether mastery experiences in the form of being able to cope more effectively with anxiety contributed to self-efficacy or whether increased self-efficacy contributed to decreases in anxiety cannot be inferred on the basis of these correlational data. Most likely, the relation is a reciprocal one, with acquisition of coping skills both contributing to and, in turn, being positively influenced by increments in self-efficacy. The sample size in this study did not permit the type of causal modeling analyses that could elucidate the nature of the causal relation, but this question is clearly an important one for future research on general self-efficacy.

In this study the salutary effect of coping skills training on generalized personal control expectancies was restricted to the Self-Efficacy Scale, whose items relate to the general level of behavioral effectiveness and control that is implied in programs such as the one used in this study; generalization to the more global beliefs in personal control reflected in the items of the I-E Scale did not occur. Moreover, change scores on the two measures were essentially independent of one another, suggesting the possibility that the psychological processes underlying changes in self-efficacy and locus of control are either different or are differentially engaged, depending on presently unknown parameters of life experiences. The lack of relation between I-E Scale change and changes in any other outcome measure suggests that the coping skills training did not engage whatever

### Table 1

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Coping skills ($n = 17$)</th>
<th>Control ($n = 19$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretreatment</td>
<td>Posttreatment</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Self-Efficacy Scale</td>
<td>82.25</td>
<td>16.39</td>
</tr>
<tr>
<td>I-E Scale</td>
<td>10.75</td>
<td>3.96</td>
</tr>
<tr>
<td>Test Anxiety Scale</td>
<td>26.69</td>
<td>3.24</td>
</tr>
<tr>
<td>STAI State* scale</td>
<td>49.69</td>
<td>6.34</td>
</tr>
<tr>
<td>STAI Trait scale</td>
<td>43.19</td>
<td>8.15</td>
</tr>
</tbody>
</table>

* Pretreatment state anxiety assessed during rather than prior to training.

Note: I-E Scale = the Internal-External Scale and STAI = State-Trait Anxiety Inventory.
mechanisms are involved in changes in the more global locus of control variable. On the whole, the research literature demonstrates a lack of consistent findings concerning locus of control shifts following mastery-oriented experiences (Lefcourt, 1982; Stein & Wallston, 1983), although such shifts clearly do occur in some instances. One reason for inconsistent patterns of findings with the I-E Scale may be the variety of different factors measured by the scale, which include global social and political beliefs as well as expectancies concerning personal behavioral competencies (Mirels, 1970). One would expect the latter to be the most readily influenced by an individual's acquisition of generalizable coping skills and the others to constitute measurement "noise" unless the mastery experiences were relevant to them. In any event, my results indicate that the behavioral competency construct measured by general self-efficacy scales such as the one used in this study is not to be equated with locus of control as measured by the I-E Scale. Indeed, Mirels's (1970) factor analysis of the I-E Scale indicated that less than 13% of the variance was accounted for by differences in expectancies concerning personal efficacy. In contrast, Coppell's (1980) factor analysis of the Self-Efficacy Scale indicated that 56% of the variance was attributable to such expectancies.

Several methodological issues relating to the nature of controls in this study and in future research on generalized expectancies deserve comment. In this investigation I used a waiting-list control group. In addition to the internal validity protections afforded by random assignment of subjects to conditions, this design controls for motivation for change and expectations that training will be available. It permits conclusions concerning whether a training condition produces change compared with no training, but it leaves unanswered questions concerning the precise mechanisms that produced the change. For example, waiting-list control conditions do not control for nonspecific variables such as attention and knowledge that one is receiving a treatment. The traditional approach to attempting to control for such variables is the attention-placebo control (Paul, 1966), in which subjects are assigned to a control condition involving a presumably inert pseudotreatment. In this study I did not use such a control condition for several reasons. First, attention-placebo controls are intended for investigations in which the presumed mechanism of change is something other than expectancy effects (e.g., insight, relearning, etc.). In this study, however, I was interested in expectancies. When expectancies are the focus of investigation, attention-placebo conditions designed to create efficacy expectancies will serve to obscure rather than illuminate the value of the intervention (O'Leary & Borkovec, 1978). It is also noteworthy that in previous test-anxiety studies that used presumably inert expectancy control conditions, no significant effects were found on academic performance measures, indicating that such measures are most likely to be influenced only by training variables (see Meichenbaum, 1985). Moreover, even if the creation of specific and generalized expectancies were not the major focus of the study, the value of expectancy control procedures is increasingly being questioned because of formidable difficulties in creating control conditions that are equivalent to the major treatment in terms of credibility and the success expectancies that they generate (e.g., Kazdin, 1980; Kendall & Norton-Ford, 1982; Parloff, London, & Wolfe, 1986). Finally, use of a control condition that is designed not to help people who are seeking assistance raises ethical considerations that are not prompted by a waiting-list control condition in which treatment is merely delayed (Kazdin, 1980).

An alternative approach to identifying mechanisms of change has much to recommend it in future research dealing with the effects of coping skills training programs like the one used in this study. The program was designed to give subjects the opportunity to learn an array of coping skills. For this reason it is impossible to specify which components of the program are responsible for the anxiety, expectancy, and performance changes that occurred. Indeed, it might have been different skills training components for different subjects. One approach to identifying the relative potency of the elements in multicomponent training programs is the dismantling strategy, in which different groups of subjects are exposed to different program elements or combinations of elements. Although this design strategy was beyond the scope of this study, the goal of which was to establish whether coping skills training would affect expectancies and other outcomes, the dismantling approach is to be recommended in follow-up studies designed to more explicitly identify causal factors. Given that the number of contact hours with a trainer and the rationale given for the training are consistent across conditions, this design has the added advantage of ruling out these factors as explanations for differences among groups trained in different skill components.

Given the demonstrated importance of perceived self-efficacy in behavioral effectiveness, psychological adjustment, and health-promoting behavior, more research is needed on the factors that affect not only the strength but also the generality of expectancies. This study indicates that training in generalizable coping skills results in changes in self-efficacy that extend beyond the situations targeted by the specific training program. Although global self-efficacy expectancies may not have as high a level of predictive precision within particular task-situation contexts as do domain-specific ones, they may be important contributors to more global psychological characteristics such as self-esteem, and they may account for a significant proportion of performance variance across a range of situations. The identification of factors that enhance generalized self-efficacy expectancies and affect the stability of such changes is a worthy focus for future research.

References


RONALD E. SMITH


Received October 15, 1987
Revision received March 1, 1988
Accepted June 3, 1988