Tests of the Generality of Self-Efficacy Theory

Albert Bandura, Nancy E. Adams, Arthur B. Hardy, and Gary N. Howells

Stanford University

The present set of studies tested the explanatory and predictive generality of self-efficacy theory across additional treatment modalities and behavioral domains. Microanalysis of changes accompanying symbolic modeling indicates that this mode of treatment enhances coping behavior partly through its effects on perceived efficacy. Cognizing modeled mastery of threats increased phobics' self-percepts of efficacy, which, in turn, predicted their specific performance attainments on tasks of varying threat value. Examination of efficacy probes revealed that making efficacy judgments has no effect on subsequent avoidance behavior or on fear arousal. The close congruence found between changes in self-efficacy and different forms of coping behavior in the treatment of agoraphobia provides some evidence for the generality of efficacy theory across different areas of functioning. Microanalysis of anticipatory and performance fear arousal accompanying varying strengths of self-efficacy also lends support for the social learning conception of fear arousal in terms of perceived coping ineffectiveness.

Over the years different modes of treatment have been devised and new ones are continually being proposed. Not only are the procedures diverse but the explanations of how they work are equally varied. Social learning theory postulates a common mechanism of psychological change—different

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2Address all correspondence to Albert Bandura, Department of Psychology, Stanford University, Stanford, California 94305.

3Now at Callison College of the University of the Pacific, Stockton, California.
modes of influence alter coping behavior partly by creating and strengthening self-perceives of efficacy (Bandura, 1977). Perceived efficacy enhances psychosocial functioning through its effects on choice behavior, effort expenditure, persistence, and self-guiding thought (Bandura, 1980).

In our previous research we have shown that perceived efficacy predicts level of behavioral change, regardless of whether self-efficacy is developed through enactive mastery, through vicarious experiences, or by eliminating fear arousal. The present studies were aimed at testing further the generality of self-efficacy theory across additional treatment modalities and different behavioral domains.

Kazdin (1973, 1974a) has developed an interesting symbolic modeling treatment that relies on cognitive execution of threatening activities as the principal vehicle of change. In this approach, people who suffer from fears and behavioral inhibitions visualize others coping successfully with threatening situations. Such cognitive enactments have proven effective in reducing phobic behavior and in enhancing assertiveness in people who are easily intimidated. This approach is generally called covert modeling, but for purposes of the present discussion it will be designated as cognitive modeling to indicate its principal modality of operation.

The success of this method has been well established, but the mechanism by which cognitive enactments boost coping behavior remains to be clarified. In the social learning analysis, repeated imaginal conquests of threats enhances performance by increasing perceived coping efficacy. Consistent with this formulation, a number of modeling variables that increase the efficacy value of vicariously derived information have been shown to augment the power of cognitive modeling. One such factor is similarity to the model (Kazdin, 1974b), which increases the personal relevance of modeled performances for observers' perceptions of their own efficacy. Observers also benefit more from seeing models overcome their difficulties by determined coping effort than by observing facile performances by adept models (Kazdin, 1973). Diversified modeling, in which feared activities are mastered by a variety of models, is superior to visualizing the same performances by a single model (Kazdin, 1975, 1976). If people of varying characteristics can succeed, then observers have a reasonable basis for increasing their own sense of efficacy.

To test the theory that cognitive modeling alters coping behavior by increasing self-perceives of efficacy, the perceived efficacy and approach behavior of severe snake phobics were measured prior to, and after, receiving cognitive modeling. Since symbolic modes of treatment typically produced only moderate changes (Bandura, 1977), the potentiating modeling variables discussed above were included in the treatment. It was hypothesized that the level and strength of perceived efficacy instated by cognitive modeling would predict individual performance accomplishments.
An untreated control group was not included because it is the relationship between efficacy judgment and performance on specific tasks that is of central interest in this study. Accounting for intragroup variability and variations in performance by individuals across different tasks imposes far more stringent explanatory and predictive requirements than does simply demonstrating that treatment enhances efficacy and performance relative to a control group. Kazdin (1973, 1976) has already demonstrated in several studies that the changes accompanying cognitive modeling are due to the cognitive enactments rather than to visualization of threats or to the effects of assessment. Moreover, previous research using identical measurement procedures with similar phobics shows that repeated testing alone produces little or no change in either self-efficacy, behavior, or fear arousal (Bandura, Adams, & Beyer, 1977; Bandura & Barab, 1973; Bandura, Blanchard, & Ritter, 1969).

The question arises as to whether making efficacy judgments in itself can affect performance by creating public commitment and pressures for consistency. In applying the microanalytic procedure, special precautions are taken to minimize any possible motivational effects of the assessment itself. Judgments of self-efficacy are made privately, rather than stated publicly. Judgments of level and strength of efficacy are made for a variety of activities in situations varying in threat value and familiarity in advance of behavior tests, rather than immediately prior to each performance task. Nevertheless, to evaluate any possible effects of efficacy probes, matched phobics received the cognitive modeling treatment either with or without assessment of self-efficacy, and subsequent changes in their coping behavior and level of fear arousal were compared.

The preceding and earlier experiments (Bandura & Adams, 1977; Bandura et al., 1977) examined the predictive power of efficacy theory across different modes of treatment applied to the same type of behavioral dysfunction. An additional study was conducted to examine the generality of this theory across different behavioral domains. For this purpose, severe agoraphobics were selected whose lives were markedly constricted by profound coping ineffectiveness that makes common activities seem filled with danger. As a result, they exhibited acute behavioral problems in diverse areas of functioning.

Self-efficacy and performance attainments were measured before and after the agoraphobics received an intensive form of participant modeling treatment that relies heavily on active mastery experiences. It was hypothesized that participant modeling would restore a strong sense of coping efficacy and that behavioral changes in different domains of activity would correspond closely to level of efficacy change.

Behavioral attainments in treatment provide raw data that must be cognitively appraised for their efficacy value. Similar past performances
can yield differential perceived efficacy (Bandura & Adams, 1977) because many factors affect performance that have little to do with operative capability, as, for example, the amount of external aid received, the amount of effort expended, and the situational circumstances of performance. Judgment of personal efficacy thus involves an inferential process in which the relative contribution of various personal and situational factors to performance successes and failures must be weighted. Hence it was further hypothesized that level of behavioral change would show closer congruence to self-efficacy than to performance attainments in treatment.

GENERALITY OF EFFICACY THEORY ACROSS TREATMENT MODALITIES

Subjects

Subjects whose lives were adversely affected by snake phobias of long standing were recruited through advertisements placed in newspapers serving the community. Of the 17 subjects who participated in the study, 4 were males and 13 were females. They ranged in age from 17 to 52 years, with a mean age of 32 years.

Pretreatment Measures

Multifaceted measures were used to provide the data required for a microanalysis of changes in self-efficacy, avoidance behavior, and fear arousal.

Behavioral Avoidance. The test of avoidance behavior consisted of a series of 29 performance tasks requiring increasingly more threatening interactions with a red-tailed boa constrictor. The set of tasks required subjects to approach a glass cage containing the snake, to look down at it, to touch and hold the snake with gloved and bare hands, to let it loose in the room and return it to the cage, to hold it within 12 cm of their faces, and finally to tolerate the snake crawling in their laps while they held their hands passively at their sides.

A female tester administered all the assessment procedures. Prior to measuring phobic behavior, subjects were given factual information about the characteristics and habits of snakes to eliminate moderately fearful subjects who might be emboldened by factual information alone. Those who could not enter the room containing the snake received a score of zero; subjects who did enter were asked to perform the various tasks in the graded
series. To control for any possible influence of expressive cues from the tester, she stood behind the subject and read aloud the tasks to be performed.

The avoidance score was the number of snake-interaction tasks the subject performed successfully. Those who could lift the snake inside the cage with a gloved hand were considered insufficiently fearful and were not included in the experiment. To maximize the generality of the findings, all people who were sufficiently phobic on the behavior test were selected for study.

**Fear Arousal Accompanying Approach Responses.** In addition to measuring performance capabilities, the degree of fear aroused by each approach response was assessed. During the behavioral test, subjects rated orally, on a 10-interval scale, the intensity of fear they experienced when each snake approach task was described to them (anticipatory fear), and again while they were performing the corresponding behavior (performance fear). These fear ratings for all the approach tasks completed were averaged to provide the index of fear arousal. The mean level of fear elicited by responses that subjects performed before treatment was compared with the fear levels in the posttest for the same subset of approach responses, and for the total number of approach responses they completed successfully.

**Efficacy Judgments.** In the pretest phase efficacy judgments were measured after the test of behavior avoidance so that subjects would have some understanding of what types of performances were required. Separate measures were obtained of the magnitude, strength, and generality of their perceived efficacy.

Subjects were provided with the list of performance tasks included in the behavioral test and instructed to designate those they judged they could perform as of then. For each task so designated, they rated the strength of their efficacy on a 100-point scale, ranging in 10-unit intervals, from high uncertainty through intermediate values of certainty to complete certitude. The level of self-efficacy was the number of performance tasks subjects designated they expected to perform with a value above 10, which was the lowest point on the scale signifying virtual impossibility. Strength of self-efficacy was computed by summing the magnitude scores across tasks and dividing the sum by the total number of performance tasks. To gauge the generality of self-efficacy, subjects rated the level and strength of their perceived efficacy in coping with an unfamiliar snake as well as with a boa constrictor similar to the one used in treatment.

Self-efficacy was measured following the behavioral pretest, after treatment but prior to the behavioral posttest, and after completing the posttest. These judgments were recorded privately and remained so during the behavior tests to minimize any motivational inducements to improve
performance that could arise had the judgments been communicated publicly to the examiner.

Treatment Conditions

Of the 17 subjects, 12 were individually matched according to pretest avoidance behavior and randomly assigned to conditions either with or without measurement of perceived efficacy after the treatment. These two matched groups were comparable in sex distribution and age, and on all of the pretest measures.

Five additional subjects were added to the group, receiving treatment with subsequent efficacy measurement to expand the size of the sample for correlational and microanalytic evaluation of the relationship between efficacy judgment and performance. To control for any possible bias in the administration of the treatment, the therapists had no knowledge of the conditions to which the subjects were assigned.

Cognitive Modeling

Three therapists, two females and one male, administered to subjects individually the cognitive modeling treatment in five sessions, each of which lasted 45 minutes. Prior to receiving the treatment, subjects practiced imaging vividly two scenes—a person shopping at a local shopping center and then waiting for the arrival of a friend. After subjects achieved a clear image of each scene, they were instructed to describe it aloud. The therapist queried for details, guided attention to nuances of the model’s behavior and affective reactions, and otherwise encouraged production of detailed imagery. The purpose of the practice items was to provide familiarity with the general procedure and to create the set for vivid visualization.

A set of hierarchically arranged threatening scenes involving interactions with snakes was used during treatment. The situations ranged from mildly threatening performances, such as looking at caged snakes, to highly intimidating encounters with them. Each scene was described briefly by the therapist, whereupon subjects visualized them in full detail and signaled by raising their finger when they achieved a clear image. Each scene was held for 15 seconds from the time a vivid image was signaled.

Subjects visualized four different models performing the set of threatening activities. They first visualized a same-sexed model of comparable age performing the tasks, then an older opposite-sexed model, then an older same-sexed model, and finally a model similar in age but opposite in sex. In accordance with the coping modeling format, each model performed each task twice, initially with some apprehension but eventually achieving fearless mastery.
Posttreatment Measures

All subjects were tested for behavioral avoidance and fear arousal accompanying approach response within a week after completing treatment. To gauge the generality of changes, subjects' approach behavior was measured initially toward a corn snake of markedly different coloration and then with the red-tailed boa used in the pretest. The two snakes were shown, in a separate study, to be of equivalent threat value as measured by subjects' avoidance behavior and fear arousal. Subjects were tested with the dissimilar snake first to minimize possible transfer effects from performance improvements during the posttest, which would be more likely to occur in dealing with a familiar threat a second time than in coping with a new one.

Subjects in the condition combining treatment with assessment of efficacy judgments were additionally tested for the level and strength of their perceived efficacy. Efficacy judgments were assessed prior to, and after, the behavioral posttest. The female tester who conducted the pretest administered the posttreatment measures.

RESULTS

Effects of Making Efficacy Judgments

Figure 1 presents graphically the combined degree of change in approach behavior and fear arousal by subjects who received cognitive modeling with and without subsequent efficacy assessment.

![Graphs showing changes in approach behavior and fear arousal](image)

**Fig. 1.** Changes in approach behavior and fear arousal accompanying cognitive modeling treatment by subjects who did, or did not, make efficacy judgments.
Two-way analyses of variance, with efficacy measurement and phases of the experiment serving as the factors, were performed on the data. The analyses revealed highly significant improvements beyond the $p < .005$ level of confidence on all behavioral and fear reduction measures, whether computed separately on data from tests with the two snakes or on the pooled data. However, making efficacy judgments had no effect either on posttest approach behavior, $F(1,10) = .00$, or on fear reduction on either the initial subset of approach responses, $F(1,10) = .20$, or on the total approach responses, $F(1,10) = .14$. The latter analyses are based on data pooled across the similar and dissimilar threats. Making efficacy judgments similarly had no effect on subsequent behavior or fear arousal when the scores are analyzed separately for the two test snakes.

**Efficacy Analysis of Cognitive Modeling**

The mean level of perceived efficacy and approach behavior displayed by the expanded sample of subjects whose self-judged efficacy was measured after treatment are presented graphically in Figure 2. Table 1 shows the significance of the changes achieved by subjects, as evaluated by the $t$ test for correlated means.

**Level of Self-Efficacy**

Comparison of level of perceived efficacy prior to treatment and following treatment, but before the behavior posttest, reveals that cognitive

![Graphs showing percent performance tasks](image)

**Fig. 2.** Level of self-efficacy and approach behavior displayed by subjects toward different threats before and after receiving the cognitive modeling treatment.
Generality of Self-Efficacy Theory

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cognitive Modeling: Pretest vs. posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of self-efficacy</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$3.76^b$</td>
</tr>
<tr>
<td>Similar threat</td>
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<tr>
<td>Dissimilar threat</td>
<td>$3.48^b$</td>
</tr>
<tr>
<td>Strength of self-efficacy</td>
<td></td>
</tr>
<tr>
<td>Total</td>
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</tr>
<tr>
<td>Similar threat</td>
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<td>Dissimilar threat</td>
<td>$3.73^b$</td>
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<td>Approach behavior</td>
<td></td>
</tr>
<tr>
<td>Total</td>
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</tr>
<tr>
<td>Similar threat</td>
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<td>Dissimilar threat</td>
<td>$4.73^c$</td>
</tr>
<tr>
<td>Fear arousal</td>
<td></td>
</tr>
<tr>
<td>Initial approach</td>
<td></td>
</tr>
<tr>
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<tr>
<td>Similar threat</td>
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</tr>
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</tr>
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<td>Total approach</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$2.98^b$</td>
</tr>
<tr>
<td>Similar threat</td>
<td>$3.48^b$</td>
</tr>
<tr>
<td>Dissimilar threat</td>
<td>$2.13^a$</td>
</tr>
</tbody>
</table>

$^a p < .05.$

$^b p < .01.$

$^c p < .001.$

modeling significantly enhances self-efficacy toward similar and dissimilar threats alike (Table I). Subjects also exhibited comparable significant increases in approach behavior toward both threats. In accord with prediction, the higher the level of perceived efficacy at the completion of treatment, the higher was the level of approach behavior ($r = .70$, $p < .01$).

**Microanalysis of Congruence Between Self-Efficacy and Performance**

Correlations between aggregate measures furnish some information on the extent to which changes in self-efficacy are accompanied by changes in behavior. But the most precise index of the relationship is provided by a microanalysis of the congruence between perceived efficacy and performance at the level of individual tasks. The microanalytic measure of congruence is obtained by recording whether or not subjects judge themselves capable of performing each of the various tasks at the end of
treatment and computing the percent of accurate correspondence between efficacy judgment and actual performance.

Although subjects received the same treatment and had the same duration of exposure to cognized coping interactions with the threat, they exhibited markedly different levels of approach behavior upon completing the treatment. Their posttreatment performances ranged from 3% to 100% of the tasks, with a mean performance attainment of 47%. Self-efficacy was a highly accurate predictor of performance on tasks varying in difficulty with both threats (81% congruence). The efficacy-behavior congruence was identical for the similar (81%) and the dissimilar (81%) threat.

The preceding indices of congruity are based on all of the assessment tasks, some of which subjects performed in the pretest. When the micro-analysis is conducted only on the subset of tasks that subjects had never performed in the pretest assessment, the degree of congruence between perceived efficacy at the end of treatment and subsequent behavior is equally high toward similar (76%) and dissimilar (76%) threats.

The assessment methodology and the type of phobic condition used in this and earlier studies were the same (Bandura & Adams, 1977; Bandura et al., 1977). Thus the congruence values obtained in this series of experiments provide evidence bearing on the generality of self-efficacy theory in predicting behavioral changes fostered by different modes of treatment. As shown in Figure 3, perceived self-efficacy is an equally accurate predictor of individual task performance, regardless of whether efficacy is enhanced by enactive mastery experiences, by vicarious performance attainments, by eliminating emotional arousal to threats, or by cognitive coping.

Inspection of efficacy and performance levels in Figure 3 suggests that subjects who undergo enactive and vicarious mastery treatments overestimate slightly their efficacy, whereas those relying on imaginal mastery judge themselves slightly less efficacious than their subsequent performance. However, except for the borderline difference for live modeling ($t = 2.00, p < .10$), the small differences between perceived efficacy and subsequent performance are not statistically significant.

**Strength of Self-Efficacy**

In the preceding analysis a weak sense of self-efficacy received the same weight as one reflecting complete certitude. However, efficacy theory postulates that intensity and persistence of effort, and hence level of performance, vary as a function of strength of perceived self-efficacy.

Cognitive mastery enhances strength as well as level of perceived efficacy. Prior to treatment, subjects held very weak expectations of their
performance capabilities (20%). The cognitive treatment, however, nearly doubled the strength of self-efficacy (36%). As shown in Table I, these improvements are highly significant both for threats analyzed separately and for the pooled data. The stronger the perceived efficacy at the completion of treatment, the higher are the performance attainments \((r = .74, \ p < .005)\).

**Perceived Coping Efficacy and Fear Arousal**

Cognitive modeling produced substantial reductions in fear arousal accompanying the initial subset and the total approach responses toward both threats. Table I presents the results of the statistical analyses of these fear decrements.

It will be recalled that strength of subjects' coping efficacy and their subsequent anticipatory and performance fear arousal were measured separately for each threatening task. Microanalyses based on individual
tasks provide the most detailed evidence on how level of fear arousal varies with perceived coping efficacy. To assess the generality of the postulated relationship, data were analyzed from previous studies of enactive, vicarious, and emotive treatments (Bandura & Adams, 1977; Bandura et al., 1977), as well as for cognitive modeling. The strength of subjects’ perceived efficacy after treatment for each task they subsequently performed in posttest was recorded, as was the amount of fear they experienced in anticipation and while performing each of these tasks. The mean fear intensity corresponding to varying strengths of coping efficacy was then computed.

Figure 4 shows the intensity of fear arousal plotted as a function of perceived efficacy. Participant modeling created such strong self-efficacy that there were only a few instances in which subjects receiving this form of treatment expressed an efficacy judgment below a value of 80. The fear

![Graphs showing the relationship between perceived efficacy and level of fear arousal after enhancement of self-efficacy through different modes of treatment.]

**Fig. 4.** Relationship between perceived efficacy and level of fear arousal after enhancement of self-efficacy through different modes of treatment.
arousal associated with the few efficacy judgments falling at and below this value was therefore pooled to obtain a stable data point for this group in the lower range of efficacy.

The overall findings show that perceived inefficacy is accompanied by high anticipatory and performance fear arousal, but as strength of perceived efficacy increases, fear arousal declines. At high strengths of self-efficacy threatening tasks are performed with virtually no apprehensiveness. The nature of the relationship between perceived inefficacy and fear arousal is essentially the same regardless of whether percepts of coping capabilities are enhanced enactively, vicariously, emotively, or cognitively.

**GENERALITY OF EFFICACY THEORY ACROSS BEHAVIORAL DOMAINS**

Agoraphobia is especially well-suited for testing the generality of self-efficacy theory because of the multidimensional nature of this disorder. Agoraphobia is traditionally defined as fear of public places, but the dysfunction is manifested in diverse ways. Agoraphobics cannot shop in stores and supermarkets because they find the lines, turnstiles, and crowds too intimidating. Public facilities, such as theaters and restaurants, which arouse feelings of being helplessly trapped in crowds, become dangerous territories to be avoided. Fear of elevators, escalators, and heights further constrict the range of the navigable environment. For those who cannot venture forth in automobiles even as a passenger, their world is confined to what is within walking distance of their homes. The boundaries of their world shrink even more drastically for those who feel so inefficacious in dealing with everyday events that they become virtual prisoners in their homes.

The treatment, which was developed and implemented by Hardy (1976), relies on enactive mastery experiences as the principal means for instilling a strong sense of coping efficacy. It includes group sessions in which clients are taught how to identify situational and ideational elicitors of fear, how to manage fear arousal through emboldening thought and self-relaxation, and how to deal assertively with social situations in which they are disregarded or exploited. But the critical ingredient of treatment involves field mastery experiences.

As in the participant modeling approach (Bandura, 1976), the therapists, who accompany clients to community settings, draw on whatever performance induction aids are needed to enable them to deal successfully with what they dread. Activities are modeled in easily mastered steps. Joint performance with the therapist, who offers physical assistance when needed, facilitates performances that clients would not consider doing on their own. They are further aided in mastering activities they find highly intimidating by using graded subtasks and gradually lengthening the time of
performance. Whenever clients cognize frightening scenarios, cognitive response-induction aids are also employed—self-debilitating ideation is supplanted by coping task-oriented thoughts (Meichenbaum, 1977). Should these induction aids prove insufficient, the severity of the threat itself is reduced. Thus, for example, clients who are unable to enter a supermarket begin their shopping activities in a small store where there were no crowds, waiting lines, and intimidating rows of checkers.

The specific mastery tasks differ across clients depending on their pattern of dysfunction. Those who fear automobile travel ride cars in residential areas, busier streets, and eventually freeways and mountain roads. Those who shun supermarkets and department stores make shopping trips to progressively larger stores. Clients who fear heights ride escalators and elevators and climb to balconies of buildings. Those who experience intense anxiety in restaurants gradually extend the time they spend in restaurants. In helping clients master their fear of open and public spaces, they are aided through participant modeling to walk progressively longer distances from the treatment center. As treatment progresses, therapists reduce their support and guided participation to authenticate the clients’ coping capabilities.

**METHOD**

**Subjects**

The participants were 11 agoraphobics, 10 females and 1 male, each of whom came with a support person from various regions of the country for an intensive 10-day treatment. They ranged in age from 19 to 69 years, with a mean age of 47 years. In seeking relief from their distress, all of these clients had been on heavy tranquilizer regimens and all but two had undergone one or more psychiatric treatments without achieving any significant change in their agoraphobic condition. The present brief but intensive treatment program was especially designed for agoraphobics residing in locales that lack effective treatments for such incapacitating fears.

This treatment format permits a precise efficacy analysis of psychological change because it eliminates the many extraneous influences that ordinarily operate during the course of an extended treatment program. On the assessment side, self-efficacy and performance attainments were measured in new situations, thereby reducing confounding from differential familiarity with the community settings in which performances are measured. On the treatment side, each of the 10 days was devoted
entirely to treatment, whereupon the clients returned after their field work to their motel located a few blocks from the treatment center. Thus there was minimal confounding of the process of change by concurrent extratherapeutic experiences, as is the case when treatment sessions are interspersed over a long time in one's home environment. This made it possible to maintain a precise record of each client's performance accomplishments during the period of treatment, which is required for comparing how well self-efficacy and past performance predict subsequent behavioral change.

Pretreatment Measures

In a preliminary screening procedure, clients were presented with a list of activities that agoraphobics often find threatening and they were asked to rate on a 4-point scale the severity of distress they experience in each of these areas. Their perceived efficacy and phobic behavior was then systematically assessed in those areas of functioning that posed moderate to severe threats for them.

Self-Efficacy. A set of eight efficacy scales was devised for the various activities agoraphobics commonly find frightening. They included such things as traveling by automobile, using elevators and escalators and climbing stairs to high levels, dining in restaurants, browsing and shopping in supermarkets, and venturing forth alone from the treatment center. Each scale consisted of a series of progressively more challenging performance tasks. For example, in assessing perceived efficacy to venture into public territory, the tasks included walking alone a few steps beyond the door of the treatment center, to the sidewalk, one-fourth of a block, across the street, a distance of one, three, and five blocks, and finally, completing a half-mile course through busy areas of the city. The performance tasks were explicitly defined, but the performance settings were designated in terms of their generic properties rather than particularized in a specific setting. Thus clients judged whether they could climb a flight of stairs to a 12-story balcony of a building and look down for 30 seconds, without detailing a specific building. The scales were structured in this way to tap generic self-percepts of efficacy.

Clients were given the efficacy scales in their problem areas and instructed to designate the tasks they judged they could perform as of then. For each task so designated, they rated the strength of their perceived efficacy on the standard 100-point scale. The level of self-efficacy was the number of performance tasks clients judged they could perform with a value above 10, which was the lowest point on the scale indicating utmost
uncertainty. Strength of self-efficacy in each area of functioning was computed by summing the magnitude scores across tasks and dividing the sum by the total number of performance tasks in the particular scale.

Perceived efficacy was measured at 4 points in the sequence of events: before and after the behavioral pretest, at the completion of the 10-day treatment program, and after the behavioral posttest. Judgments of level and strength of efficacy were made privately, rather than stated publicly, to minimize any possible motivational effects of the assessment itself.

Coping Behavior. The tests of coping behavior consisted of series of performance tasks that were progressively more intimidating. Automobile travel included such items as sitting in a car for several minutes and riding in residential areas, on minor arterial streets, on busy commercial thoroughfares, and on freeways in light and heavy traffic. The shopping task tested whether clients could enter a supermarket, browse in different areas of the store, wait in line with their selections, and purchase a designated number of items through express and regular checkout lines.

Coping with threats of high places was measured in terms of three sets of tasks. The performance tasks included in the test of avoidance of elevators measured whether clients could enter elevators, remain in them with doors opened and closed, and then ride to upper floors in different buildings. Similar hierarchical tasks were used to assess whether clients could stand near, and then ride, escalators up and down different floor levels in different buildings. The heights test required climbing flights of stairs to each of 12 floors of a high-rise building and looking down from a balcony at each level for 30 seconds.

In measuring ability to cope with restaurant situations, clients were asked to enter restaurants, to select tables at varying distances from the door, and to order and eat progressively more food items. Fear of walking through city streets alone was indexed by the tasks described earlier.

The behavioral tests were standardized by clearly specifying the community settings to be used for the performance tasks, the sequences in which they were to be administered, and the criteria of successful performance. To evaluate the generality and treatment effects, the community settings chosen for the behavioral tests differed from those used in the field mastery treatment.

Four female experimenters conducted the behavioral tests before and after treatment with the cases assigned to them. Only the behavioral dimensions on which clients exhibited severe dysfunction (e.g., they could not walk alone beyond a block of the treatment center; they could not ride an escalator one floor; they could not walk to the first aisle of a supermarket) were included in the assessment of changes accompanying treatment. Two separate intensive groups, of 9 and 11 clients each, were administered the pretest procedures. Approximately half of the clients in
Fig. 6. Level of self-efficacy and coping behavior displayed by subjects in different areas of functioning before and after receiving treatment.

tioning. Because only two of the clients were unable to ride in an automobile as a passenger, the improvements they achieved in this activity were included in the aggregate measure but could not be analyzed separately. Table II summarizes the significance of these changes.

Self-Efficacy

The behavioral test itself produced no significant changes in either level or strength of self-efficacy regardless of whether it was administered before or after treatment. Thus in both phases of the study the clients had a good sense of their coping capabilities and did not alter their self-appraisal
Table II. Significance of Intragroup Changes Across Phases and Areas of Functioning

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total</th>
<th>Walking alone</th>
<th>Shopping</th>
<th>Heights</th>
<th>Restaurants</th>
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<td>Level of self-efficacy</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest (pre₁-pre₁₂)</td>
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<td>.72</td>
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<td>.02</td>
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<td>Strength of self-efficacy</td>
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<tr>
<td>Pretest (pre₁-pre₁₂)</td>
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*a p < .05.
*b p < .01.
*c p < .001.
*d Efficacy changes are evaluated by the F test; changes in coping behavior and fear are evaluated by the t test for correlated means.

as a result of being tested for what they could do. However, both level and strength of efficacy were substantially boosted by the enactive mastery treatment. These increases were highly significant in each of the different areas of functioning as well as on the aggregate measure (Table II).

Coping Behavior

The notable improvements in coping behavior, which correspond closely to level of efficacy change, were significant for the aggregate measure and in all of the various behavioral domains.

Product-moment correlations were computed between the aggregate measure of perceived efficacy at the end of the treatment program and level of coping behavior. Consistent with findings of the studies with ophidiophobics, perceived efficacy is positively related to performance attainments. The higher the level of self-efficacy (r = .78, p < .01) and the
each group (5 and 6 clients, respectively), met the stringent criterion on one or more dimension for inclusion in the assessment of therapeutic change.

Fear Arousal Accompanying Coping Responses. During the behavioral tests, clients rated orally, on a 10-interval scale, the intensity of fear they experienced when each performance task was described to them, and again while they were performing the corresponding behavior. These ratings of anticipatory and performance fear arousal for the tasks completed were averaged within each behavioral dimension to provide an index of level of fear arousal.

Fear Proneness. As the final task in the pretreatment assessment, clients completed a comprehensive fear inventory containing 20 items in each of the following classes of fear: physical afflictions and injuries, animals, interpersonal encounters, classical phobias, and a collection of miscellaneous fears. They rated their fear toward each object or situation on 5-point scales describing increasing degrees of distress. The mean intensity of fear was scored separately for each of the five categories and summed across all of the items to provide an overall measure of vulnerability to fear arousal.

Implementation of the Treatment Program

As will be recalled from the earlier discussion, the treatment program included preparatory group sessions and field mastery experiences. The support persons, usually spouses, accompanied the clients to the group sessions. Different aspects of the group sessions, such as training in self-relaxation, proximal goal setting, and assertiveness and self-expressiveness, were conducted by different members of the treatment staff. Previous field work suggested that agoraphobics are inclined to discount the significance of their performance successes when they are all achieved with only one field therapist. Successes gained under such circumstances may be partly misattributed to the external social support when, in fact, they reflect restored coping capabilities. To minimize this negating process, clients were helped to gain mastery over what they feared by different field therapists both within and across behavioral dysfunctions. A total of seven field therapists, several of whom were ex-agoraphobics, conducted the enactive-mastery phase of the treatment.

Through adept use of performance induction aids the field therapists helped the agoraphobics individually to move out into the environment and to expand their coping skills. Whenever they became unduly distressed they retreated momentarily and then moved forward again with appropriate performance supports. As the clients developed their coping capabilities, the field therapists reduced their support and guided participation. They
assigned the clients progressively more challenging tasks to perform alone while the therapist remained in the vicinity. During the self-directed mastery phase of the treatment, solo excursions and activities were arranged for clients to carry out on their own.

For each session the field therapists recorded on a standard protocol listing the hierarchical mastery tasks how many were attempted and the clients' reactions each time a task was presented to them—whether they declined, tried but retreated, tried and succeeded, or surpassed the level of performance aimed for at that time.

Posttreatment Assessment

At the end of the treatment series the assessment procedures used in pretest phase were readministered. As in the pretest, the efficacy scales were administered prior to, and following, the behavioral avoidance tests.

RESULTS

The changes in level of self-efficacy and coping behavior are shown in Figure 5 for the pooled data and in Figure 6 for the separate areas of func-

Fig. 5. Changes in self-efficacy and coping behavior averaged across different areas of functioning.
stronger the self-percepts of efficacy \((r = .70, p < .01)\) the greater is the coping behavior.

**Microanalysis of Congruence Between Self-Efficacy and Performance**

The results of primary interest concern the degree of congruence between self-efficacy and performance on individual tasks. The correspondence between efficacy judgment and whether or not clients could subsequently perform the various tasks in their areas of dysfunction was computed. Self-efficacy was an accurate predictor of performance in the behavioral tests on 79% of the tasks for the pretest phase of the study, and in 88% of the tasks in the posttreatment assessment. When the microanalysis was conducted only on the subset of tasks that clients had not performed in the pretest, the degree of congruence between perceived self-efficacy at the end of treatment and subsequent performance was 80%.

**Relative Predictiveness of Past Performance and Self-Efficacy**

It was previously noted that the clients' performance attainments on the hierarchical mastery tasks during the course of treatment were recorded in detail. These data provide a basis for comparing the relative success of past performance and self-efficacy in predicting behavioral accomplishments in the posttreatment assessment. Dining in restaurants was excluded from this analysis because the clients often ventured into restaurants as a group along with the therapists and support persons. On the other occasions they typically ate their meals with their support person, if not with some other members of the group. Since performance attainments with social supports are likely to exceed those achieved on one's own, this activity would yield an inflated measure of past performance.

The main discrepancy between performance attainments in the field treatment and test performance (26%) was more than double the discrepancy between perceived efficacy and test performance (10%). This difference between performance and efficacy predictors was significant as evaluated by the \( t \) test for correlated means \((t = 2.17, p < .05)\).

**Fear Arousal**

Table II shows the significance of changes in level of fear elicited by coping responses subjects performed before treatment with fear levels reported in the posttest for the same subset of coping responses and for the
total number of coping responses they completed. Following treatment clients experienced considerably less anticipatory and performance fear arousal in each of the behavioral domains.

Data from the fear-proneness inventory provide some additional evidence on the generalized effects of treatment on vulnerability to fear arousal in widely different areas of functioning. In the posttreatment assessment clients reported fewer fears and widespread decreases in intensity of fears of varied threats ranging from animals to physical injury to interpersonal situations and to miscellaneous threats (Table II).

**DISCUSSION**

The overall findings of this series of studies provide several lines of support for the theory that perceived efficacy mediates changes in coping behavior and fear arousal. It was previously shown that self-efficacy can be enhanced by efficacy information conveyed through several different treatment modalities. The analysis of changes accompanying symbolic modeling reveals that repeated cognitive mastery of threats also boosts perceived coping efficacy.

The most stringent tests of a theory explore the links between environment influences, indicants of the critical mediating process, and action. It is much easier to show that behavior bears some relationship to environmental factors than to demonstrate that, in fact, the antecedent influences operate on behavior through the hypothesized mechanism. Results of the microanalytic procedure confirm that self-percepts of efficacy—whether produced enactively, vicariously, emotively, or cognitively—predict not only level of behavioral change resulting from different modes of treatment but variations in coping behavior by different individuals receiving the same type of treatment, and even specific performance attainments by individuals on different tasks. The close congruence found between self-efficacy and action in the treatment of agoraphobia provides further evidence for the generality of efficacy theory across behavioral domains as well as across treatment modalities.

That efficacy is a good predictor of coping behavior in nonenactive modes of treatment is of special interest because, in these approaches, persons observe or cognize coping performances but they themselves do not perform the feared activities. Consequently, they have no behavioral data for forming generalizable perceptions of their own capabilities. They raise their sense of coping efficacy on the basis of indirect sources of efficacy information. It is in the nonenactive treatments, where the same environmental input typically produces widely variable behavior, that theories eschewing cognitive processes are fraught with explanatory and
predictive difficulties. This is the arena in which the generality of competing theories about the mechanisms of change are best put to test.

It is possible to generate alternative explanations for particular subsets of data, but the mechanism proposed in the present theory appears to account equally well for the diverse sets of findings. It might be argued, for example, that self-efficacy is an accurate predictor of performance in the enactive mode of treatment because people were judging their future performance from their past behavior. However, this type of interpretation lacks explanatory and predictive value for the vicarious, emotive, and cognitive treatments, in which perceived efficacy is an equally accurate predictor of performance changes, although the persons engaged in no overt behavior. They therefore had no behavioral cues for forming generalizable perceptions of their own capabilities.

Even in the enactive treatment perceived efficacy is often a better predictor of behavior in generalization tests than is past performance. Moreover, the gains in self-efficacy derived from the same partial enactive mastery during the course of treatment predicts differential performance attainments on threatening tasks that individuals had never done before (Bandura & Adams, 1977). Behavior is raw data that must be cognitively appraised for its efficacy value. The same past performances can yield differential perceived efficacy because many factors affect performance that have little to do with operative capability. Judgment of personal efficacy thus involves an inferential process in which the relative contribution of various personal and situational factors to performance successes and failures must be weighted. The degree to which people are likely to raise their perceived efficacy through performance successes will depend upon, among other factors, the difficulty of the task, the amount of effort they expend, the amount of external aid they receive, the situational circumstances under which they perform, and the temporal pattern of their successes and failures.

Theorists who conceive of thoughts as by-products of conditioned responses that do not enter into the determination of behavior view efficacy judgments as epiphenomenal accompaniments of conditioned autonomic responses (Eysenck, 1978; Wolpe, 1978). This type of analysis, which gives causal primacy to autonomic responses, rests on the assumption that autonomic responses regulate avoidance behavior. Dual-process theory has its many critics (Bolles, 1972; Herrnstein, 1969; Schwartz, 1978). A large body of evidence from different lines of research reveals no consistent relationship between autonomic responses and avoidance behavior (Bandura, 1978; Black, 1965; Rachman & Hodgson, 1974; Rescorla & Solomon, 1967). Given that autonomic arousal is a poor predictor of avoidance behavior and that self-efficacy can predict avoidance behavior rather well, arousal can hardly serve as the superordinate cause of both self-
efficacy and behavior. If efficacy judgment is an epiphenomenal by-product of autonomic arousal, then arousal should be an equally precise predictor of avoidance behavior, which it is not. Indeed, in the social learning view, it is largely perceived inefficacy in coping with potentially injurious situations that produces autonomic arousal. Evidence that perceived efficacy predicts achievement, as well as fearful, behavior extends the generality of the theory (Brown & Inouye, 1978; Schunk, Note 1). Explanatory mechanisms that are sufficiently integrative to account for diverse types of behavior have decided advantages over conceptual approaches that require separate theories for different classes of behavior.

The present research addressed the issue of whether making efficacy judgments in itself can affect performance. The findings show that recording efficacy judgments had no effect either on subsequent avoidance behavior or on fear arousal. Distressed phobics who spend time and effort to gain relief from their debilitating condition have ample personal inducements to change, regardless of whether or not they record their self-appraisals of coping efficacy. Strong personal motivation easily overrides any extraneous situational factors. If performance expectations are made publicly in an evaluative context just before each item is attempted, the assessment procedure might well create public commitment and involvement, especially on tasks that hold little interest for subjects (Dweck & Gilliard, 1975; Zajonc & Brickman, 1969). However, there is some evidence to suggest that performance on an achievement task is the same regardless of whether subjects do or do not make prior efficacy judgments, even though they were made publicly just prior to each trial (Brown & Inouye, 1978).

Any alternative causal explanation for the different lines of evidence would have to invoke a superordinate mediator that controls both efficacy judgment and behavior. Such a mediator would have to be an exceedingly complex one to account adequately for the diverse sets of relationships. To cite but a few examples, it would have to affect differentially efficacy judgments and behavior resulting from maximal enactive mastery; it would have to produce different levels of self-efficacy from equivalent reductions in experienced fear arousal and cognitive mastery; it would have to produce variable efficacy judgments from similar partial mastery experiences; and it would have to explain congruence between efficacy judgment and behavior across markedly different types of behavior. Social learning theory posits a central processor of efficacy information. That is, people process, weight, and integrate diverse sources of information concerning their capabilities, and they regulate their choice behavior and effort expenditure accordingly.

The research with the agoraphobics was aimed at elucidating the role of perceived efficacy in the process of change in diverse areas of functioning rather than to gauge the power of the treatment itself. A repeated-measures
design provides the type of data needed for testing the value of self-efficacy in predicting variation in behavioral changes between individuals receiving the same treatment and within individuals across a wide variety of tasks. Considering that the agoraphobics had undergone extended prior treatments with little benefit, there is every reason to conclude that their substantial behavioral improvements within a 10-day period were due in large part to the treatment. Given these promising results, systematic tests of comparative effectiveness and component analyses seem warranted.

Before arriving for treatment the clients completed a questionnaire exploring the predisposing determinants, onset, and past treatments of their agoraphobic behavior, which sheds some interesting light on this condition. These reports revealed two types of onset conditions. In some cases the agoraphobic reaction was first elicited in an acutely distressing situation involving helpless confinement (e.g., being trapped in an immense snowstorm; awakening suddenly at night in an enclosed wagon). In other cases the agoraphobic behavior arose from massive accumulation of everyday problems that eventually overwhelmed the clients' coping capabilities. Regardless of whether the distress reflected sudden or mounting problems, the result was an intense panic reaction that left the clients with a profound sense of coping ineffectivity.

Following the panic experience, the clients' thoughts centered increasingly on their vulnerability to disintegrative loss of control in public situations. They began to dread excursions outside the home because the aversive experiences recurred unpredictably. Since distress subsided in the safety of the home, it took on powerful security value. Once perceptions of coping efficacy were undermined, even mild distress in taxing situations foreboded disintegrative loss of control. As a result, the clients generalized their phobic avoidance to increasing domains of functioning in which they had never suffered disabling experiences.

The self-report data also provide some evidence on social learning factors that may have predisposed the clients to adopt agoraphobic solutions to their personal distress. In the majority of cases (64%), at least one or more family members, usually the mother or an older sister, exhibited agoraphobic behavior. Indeed, the present sample included a mother and daughter pair. Thus, for many of the clients, agoraphobic reactions to stress were habitually modeled in the family.

Evidence that active mastery restores behavioral functioning underscores the need to distinguish between historical and contemporary determinants of dysfunctional behavior. After a disintegrative experience undermines a person's perceptions of his coping capabilities, the resulting "head problem"—profound perceived inefficacy—becomes a major cause of the continuing self-debilitation. The original undermining stressors may have diminished or ceased altogether, but the inefficacy problem lingers.
Dysfunctional patterns of behavior can be successfully eliminated by mastery experiences that cultivate strong personal efficacy but appear to be little affected by insight into their origins. As the findings show, the higher the level of self-efficacy, the greater is the stress tolerance and the more venturesome is the behavior.

Results of the present series of studies indicate that perception of one's coping capabilities affects emotional arousal as well as behavior. In the social learning view of fear arousal, it is mainly perceived ineffectiveness in coping with potentially aversive events that makes them fearsome (Bandura, 1980). To the extent that one can prevent, terminate, or lessen the severity of aversive events there is little reason to fear them. Several lines of evidence from studies of the effects of perceived controllability on human stress are consistent with this formulation (Averill, 1973; Miller, 1979; Miller & Grant, Note 2). Being able to wield behavioral control over aversive events reduces autonomic arousal even though the control is unexercised. It is the self-knowledge of coping efficacy rather than its application that reduces arousal. People who believe they can exercise some control over aversive events display less autonomic arousal and performance impairment than those who believe they lack personal control, even though they are all subjected to the same aversive stimulation.

That perceived efficacy may operate as a cognitive mechanism by which controllability reduces fear arousal receives support from microanalysis of anticipatory and performance arousal as a function of varying strengths of coping efficacy. On tasks for which people judged themselves efficacious, a low strength of efficacy was accompanied by high anticipatory and performance arousal, whereas a strong sense of efficacy resulted in little fear arousal. As they approached the upper bounds of their perceived efficacy with weaker assuredness, they performed threatening activities with a great deal of fear.

Evidence that perceived efficacy predicts level of fear arousal regardless of whether self-percepts of coping efficacy are developed enactively, vicariously, emotively, or cognitively adds generality to the social learning formulation. However, the relationships obtained in the latter studies are based solely upon experiential measures of fear arousal. Further tests of this theory must examine how perceived coping efficacy affects level of arousal as measured physiologically.

REFERENCE NOTES


REFERENCES

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