Self-Efficacy Mechanism in Human Agency

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ABSTRACT: *This article addresses the centrality of the self-efficacy mechanism in human agency. Self-percepts of efficacy influence thought patterns, actions, and emotional arousal. In causal tests the higher the level of induced self-efficacy, the higher the performance accomplishments and the lower the emotional arousal. Different lines of research are reviewed, showing that the self-efficacy mechanism may have wide explanatory power. Perceived self-efficacy helps to account for such diverse phenomena as changes in coping behavior produced by different modes of influence, level of physiological stress reactions, self-regulation of refractory behavior, resignation and despondency to failure experiences, self-debilitating effects of proxy control and illusory inefficaciousness, achievement strivings, growth of intrinsic interest, and career pursuits. The influential role of perceived collective efficacy in social change is analyzed, as are the social conditions conducive to development of collective inefficacy.*

Psychological theorizing and research tend to center on issues concerning either acquisition of knowledge or execution of response patterns. As a result the processes governing the interrelationship between knowledge and action have been largely neglected (Newell, 1978). Some of the recent efforts to bridge this gap have been directed at the biomechanics problem—how efferent commands of action plans guide the production of appropriate response patterns (Stelmach, 1976, 1978). Others have approached the matter in terms of algorithmic knowledge, which furnishes guides for executing action sequences (Greeno, 1973; Newell, 1973).

Knowledge, transformational operations, and component skills are necessary but insufficient for accomplished performances. Indeed, people often do not behave optimally, even though they know full well what to do. This is because self-referent thought also mediates the relationship between knowledge and action. The issues addressed in this line of inquiry are concerned with how people judge their capabilities and how, through their self-percepts of efficacy, they affect their motivation and behavior.

Recent years have witnessed a growing convergence of theory and research on the influential role of self-referent thought in psychological functioning (DeCharms, 1968; Garber & Seligman, 1980; Lefcourt, 1976; Perlmuter & Monty, 1979; Rotter, Chance, & Phares, 1972; White, 1959). Although the research is conducted from a number of different perspectives under a variety of names, the basic phenomenon being addressed centers on people's sense of personal efficacy to produce and to regulate events in their lives.

Efficacy in dealing with one's environment is not a fixed act or simply a matter of knowing what to do. Rather, it involves a generative capability in which component cognitive, social, and behavioral skills must be organized into integrated courses of action to serve innumerable purposes. A capability is only as good as its execution. Operative competence requires orchestration and continuous improvisation of multiple subskills to manage ever-changing circumstances. Initiation and regulation of transactions with the environment are therefore partly governed by judgments of operative capabilities. Perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations.

Function and Diverse Effects of Self-Percepts of Efficacy

Self-percepts of efficacy are not simply inert estimates of future action. Self-appraisals of opera-

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tive capabilities function as one set of proximal determinants of how people behave, their thought patterns, and the emotional reactions they experience in taxing situations. In their daily lives people continuously make decisions about what courses of action to pursue and how long to continue those they have undertaken. Because acting on misjudgments of personal efficacy can produce adverse consequences, accurate appraisal of one's own capabilities has considerable functional value. Self-efficacy judgments, whether accurate or faulty, influence choice of activities and environmental settings. People avoid activities that they believe exceed their coping capabilities, but they undertake and perform assuredly those that they judge themselves capable of managing (Bandura, 1977a).[1]

Judgments of self-efficacy also determine how much effort people will expend and how long they will persist in the face of obstacles or aversive experiences. When beset with difficulties people who entertain serious doubts about their capabilities slacken their efforts or give up altogether, whereas those who have a strong sense of efficacy exert greater effort to master the challenges (Bandura & Schunk, 1981; Brown & Inouye, 1978; Schunk, 1981; Weinberg, Gould, & Jackson, 1979). High perseverance usually produces high performance attainments.

High self-percepts of efficacy may affect preparatory and performance effort differently, in that some self-doubt bestirs learning but hinders adept execution of acquired capabilities. In applying existing skills strong self-efficaciousness intensifies and sustains the effort needed for optimal performance, which is difficult to realize if one is beleaguered by self-doubts. In approaching learning tasks, however, those who perceive themselves to be supremely self-efficacious in the undertaking feel little need to invest much preparatory effort in it. Salomon (in press) provides some evidence bearing on this issue. He found that high perceived self-efficacy as a learner is associated with heavy investment of cognitive effort and superior learning from instructional media that children consider difficult, but with less investment of effort and poor learning from media that they believe to be easy. Thus some uncertainty has preparatory benefits. An aid to good performance is a strong sense of self-efficacy to withstand failures coupled with some uncertainty (construed in terms of the challenge of the task, rather than fundamental doubts about one's capabilities) to spur preparatory acquisition of knowledge and skills.

People's judgments of their capabilities additionally influence their thought patterns and emotional reactions during anticipatory and actual transactions with the environment. Those who judge themselves inefficacious in coping with environmental demands dwell on their personal deficiencies and imagine potential difficulties as more formidable than they really are (Beck, 1976; Lazarus & Launier, 1978; Meichenbaum, 1977; Sarason, 1975). Such self-referent misgivings create stress and impair performance by diverting attention from how best to proceed with the undertaking to concerns over failings and mishaps. In contrast, persons who have a strong sense of efficacy deploy their attention and effort to the demands of the situation and are spurred to greater effort by obstacles.

Microanalytic Research Strategy

Psychological theories postulate intervening mechanisms through which external factors affect behavior. Attempts to verify a theory commonly seek evidence of covariation between behavior and the external factors believed to instate the intervening events, without including independent probes of the postulated mediator. Demonstrations of environmental–action covariation increase confidence in a theory, but they do not establish firmly its validity because the covariation can be mediated through other mechanisms capable of producing similar effects. A postulated mediator is not directly observable, nevertheless it should have observable indicants other than the actions it presumably governs. Hence the most stringent test of a theory is provided by anchoring the hypothesized mediator in an independently measurable indicant and confirming that external factors are indeed linked to an indicant of the internal mediator and that it, in turn, is linked to overt behavior.

In testing propositions about the origins and functions of perceived self-efficacy, a microanalytic methodology is employed (Bandura, 1977a). Individuals are presented with graduated self-efficacy scales representing tasks varying in difficulty, complexity, stressfulness, or some other dimension, depending on the particular domain of

[1] In the case of habitual routines, people develop their self-knowledge through repeated experiences, to the point where they no longer need to judge their efficacy on each occasion that they perform the same activity. They behave in accordance with what they know they can or cannot do, without giving the matter much further thought. Significant changes in task demands or situational circumstances, however, prompt self-efficacy reappraisals as guides for action under altered conditions.

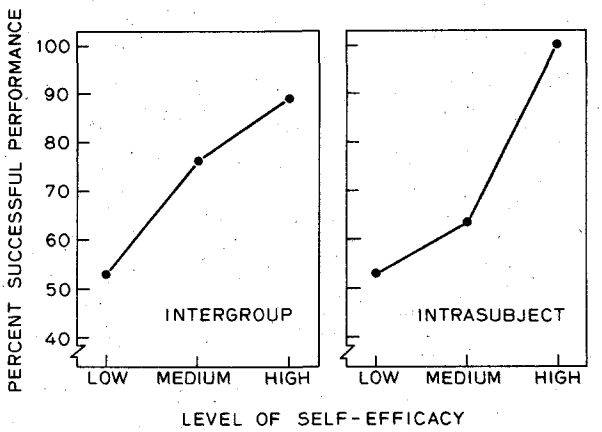

Figure 1. Mean performance attainments as a function of differential levels of perceived self-efficacy. (The left panel shows the performances of groups of subjects whose self-percepts of efficacy were raised to either low, medium, or high levels; the right panel shows the performances of the same subjects at different levels of self-efficacy [Bandura, Reese, & Adams, in press].)

functioning being explored. They designate the tasks that they judge they can do and their degree of certainty. An adequate efficacy analysis requires detailed assessment of the level, strength, and generality of perceived self-efficacy commensurate with the precision with which performance is measured. This methodology permits microanalysis of the degree of congruence between self-percepts of efficacy and action at the level of individual tasks.[2]

Of central interest to self-efficacy theory is the dynamic interplay among self-referent thought, action, and affect. In this approach, self-referent thought is indexed in terms of particularized self-percepts of efficacy that can vary across activities and situational circumstances rather than as a global disposition assayed by an omnibus test. Measures of self-percepts are tailored to the domain of psychological functioning being explored. A special merit of the microanalytic approach is that particularized indices of self-efficacy provide refined predictions of human action and affective reactivity.

Causal Analysis of Self-Percepts of Efficacy

Some of the research conducted within the efficacy framework has sought to clarify the causal link between self-percepts of efficacy and action (Bandura, Reese, & Adams, in press). For this purpose differential levels of perceived efficacy were induced in phobic subjects, whereupon their coping behavior was measured. In one experiment the level of perceived self-efficacy was raised through enactive mastery of progressively more threatening activities. This was achieved through a sequential procedure in which mastery of each task was followed by a self-efficacy probe until subjects achieved their preassigned low, moderate, or high level of self-efficacy. The next phase of the study included successive modifications of self-efficacy level within the same subjects.

Inspection of Figure 1 shows that performance varies as a function of perceived efficacy. Increasing levels of perceived self-efficacy both across groups and within the same subjects gave rise to progressively higher performance accomplishments.

Judgment of self-efficacy from enactive information is an inferential process in which the relative contribution of personal and situational factors must be weighted and integrated. Fine-grain analysis of enactive mastery and the growth of self-efficacy during the course of treatment reveals that self-percepts of efficacy may exceed, match, or remain below enactive attainments, depending on how they are appraised.[3] That self-efficacy is not

[2] The question arises regarding whether making self-efficacy judgments in itself can affect performance by creating public commitment and pressures for consistency (Rachman, 1978). 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 different situations in advance of behavior tests, rather than immediately prior to each performance task. Research on the reactive effects of efficacy assessment shows that performance and fear arousal are the same regardless of whether people do or do not make prior self-efficacy judgments (Bandura, Adams, Hardy, & Howells, 1980; Brown & Inouye, 1978). Nor are people's performances affected by whether they make their self-efficacy judgments publicly or privately (Gauthier & Ladouceur, 1981; Weinberg, Yukelson, & Jackson, 1980). Contrary to the consistency demand notion, degree of congruence between self-efficacy judgment and action is unaffected or reduced when self-efficacy judgments are reported publicly, with knowledge that they will be inspected, rather than if they are made privately under conditions in which no one will ever see them (Telch, Bandura, Vinciguerra, Agras, & Stout, 1981). When public inspection of their judgments is made salient, people are inclined to become conservative in their self-appraisals, which creates efficacy–action discordances. Veridical self-appraisal is thus best achieved under test conditions that reduce social evaluative factors.

[3] During the efficacy-induction phase the mastery tasks were presented in a standard hierarchical order, rather than varied in accordance with changes in subjects' perceived efficacy. If a small success instilled a large increase in perceived self-efficacy, to present next a correspondingly high mastery task would risk raising self-efficacy beyond the preassigned level. These treatment process data reveal the impact of each incremental mastery experience on subsequent self-percepts of efficacy. After subjects reached their preassigned level of perceived self-

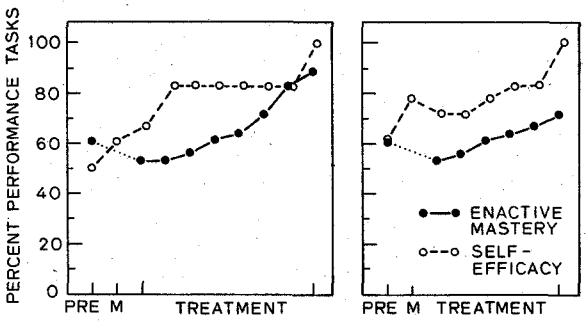

Figure 2. Data from two moderately phobic subjects, illustrating how similar mastery experiences have variable effects on perceived self-efficacy over the course of treatment. (PRE represents the subjects' pretest status; M, the changes produced in perceived self-efficacy by the preparatory modeling alone; and TREATMENT, the changes in subjects' self-percepts of efficacy measured after each task mastery [Bandura et al., in press].)

merely an isomorphic reflection of past performance can be illustrated by a few representative cases. For the female subject presented in the left panel of Figure 2, modeling and initial enactive successes heightened self-efficacy substantially. But her self-percepts of efficacy did not subsequently change, even though progressively more tasks were mastered. An additional success produced maximal self-efficacy. The male subject portrayed in the right panel judges himself to be more and more efficacious with each enactive success. However, self-percepts of efficacy consistently exceed prior enactive attainments.

In Figure 3 the patterns of changes are plotted for two markedly phobic subjects. The subject in the upper panel gains considerable self-efficacy from merely observing the feared activities modeled, but subsequent enactive successes produce little additional change for some time. Thereafter, advancing mastery is accompanied by variable growth of self-percepts of efficacy that, at each hierarchical step, are well above the preceding task mastery. For the subject in the lower panel, self-efficacy outstrips performance in the initial phase of treatment, reaches a plateau in the intermediate phase, then drops below performance, and remains beneath it until self-efficacy eventually surpasses performance.

Because people are influenced more by how they read their performance successes than by the successes per se, perceived self-efficacy was a better predictor of subsequent behavior than was performance attainment in treatment. The finding that self-percepts of efficacy often surpass final performance as predictors of future performance receives support from other studies concerned with markedly different activities (Bandura & Adams, 1977; DiClemente, 1981; Kendrick, Craig, Lawson, & Davidson, Note 1; McIntyre, Mermelstein, & Lichtenstein, Note 2).

In preliminary explorations of the cognitive processing of enactive experiences, people register notable increases in self-efficacy when their experiences disconfirm misbeliefs about what they fear and when they gain new skills to manage threatening activities. They hold weak self-percepts of efficacy in a provisional status, testing their newly acquired knowledge and skills before raising judgments of what they are able to do. If in the course of completing a task, they discover something that appears intimidating about the under-

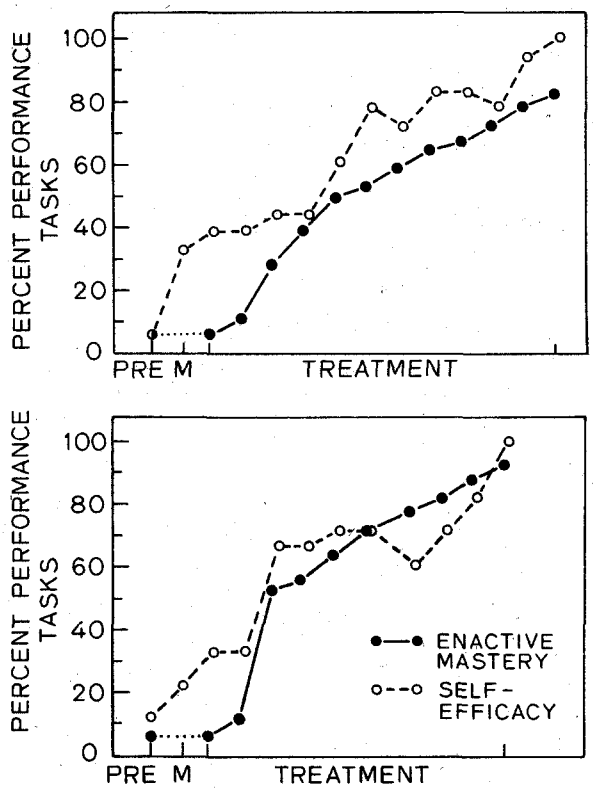

Figure 3. Data from two severe phobics, illustrating how similar mastery experiences have variable effects on perceived self-efficacy over the course of treatment. (PRE represents the subjects' pretest status; M, the changes produced in perceived self-efficacy by the preparatory modeling alone; and TREATMENT, the changes in subjects' self-percepts of efficacy measured after each task mastery [Bandura et al., in press].)

efficacy, the performance test gauged fully what they were able to do; at which point actions corresponded closely to self-percepts.

taking or suggests limitations to their mode of coping, they register a decline in self-efficaciousness despite their successful performance. In such instances apparent successes leave them shaken rather than emboldened. As they gain increasing ability to predict and to manage potential threats, they develop a robust self-assurance that serves them well in mastering subsequent challenges.

VICARIOUS INDUCTION OF DIFFERENTIAL LEVELS OF PERCEIVED SELF-EFFICACY

A further experiment was designed to provide an even more stringent test of the causal contribution of perceived self-efficacy to action by creating differential levels of self-efficacy vicariously. In this mode of efficacy induction, persons observe coping strategies being modeled, but they themselves do not execute any actions. Consequently, motoric mediators and their effects do not come into play. In vicarious influence observers have to rely solely on what they see in forming generalized perceptions of their coping capabilities.

The same causal paradigm was used in which level of performance was examined as a consequence of induced differential levels of self-efficacy. The model displays emphasized two aspects—predictability and controllability—that are conducive to the enhancement of self-percepts of efficacy. In demonstrating predictability the model repeatedly exemplified how feared objects are likely to behave in each of many different situations. Predictability reduces stress and increases preparedness in coping with threats (Averill, 1973; Miller, 1981). In modeling controllability the model demonstrated highly effective techniques for handling threats in whatever situation might arise.

Self-efficacy probes were made at selected points in the modeling of coping strategies until subjects' perceived self-efficacy was raised to preassigned low or medium levels. The third level—maximal self-efficacy—was not included because some phobics would undoubtedly have required at least some performance mastery experiences to attain complete self-efficaciousness. As shown in Figure 4, the higher level of perceived self-efficacy produced the higher performance attainments.

The combined findings lend validity to the thesis that self-percepts of efficacy operate as cognitive mediators of action. The efficacy–action relationship is replicated across different modes of efficacy induction, across different types of phobic dysfunctions, and in both intergroup and intrasubject experimental designs. Microanalyses of efficacy–action congruences reveal a close fit of performance to self-percepts of efficacy on individual tasks. People successfully execute tasks that fall within their enhanced range of perceived self-efficacy, but shun or fail those that exceed their perceived coping capabilities.

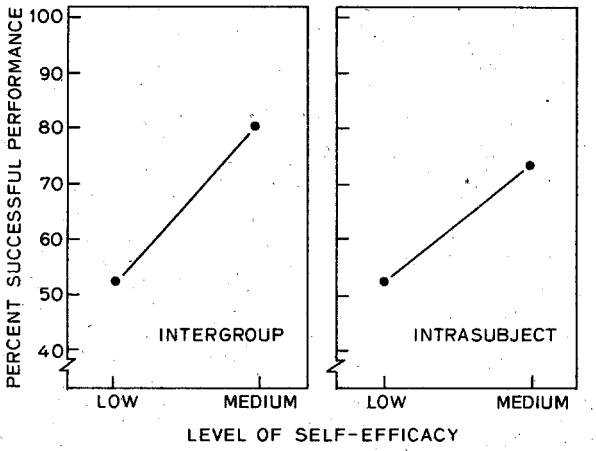

Figure 4. Mean performance attainments by different groups of subjects at different levels of perceived self-efficacy (intergroup) and by the same subjects at higher levels of perceived self-efficacy (intrasubject) [Bandura et al., in press].

Predictive Generality Across Modes of Influence

In the social learning view, judgments of self-efficacy, whether accurate or faulty, are based on four principal sources of information. These include performance attainments; vicarious experiences of observing the performances of others; verbal persuasion and allied types of social influences that one possesses certain capabilities; and physiological states from which people partly judge their capability, strength, and vulnerability.

Enactive attainments provide the most influential source of efficacy information because it can be based on authentic mastery experiences. Successes heighten perceived self-efficacy; repeated failures lower it, especially if failures occur early in the course of events and do not reflect lack of effort or adverse external circumstances.

People do not rely on enactive experience as the sole source of information about their capabilities. Efficacy appraisals are partly influenced by *vicarious experiences*. Seeing similar others perform successfully can raise efficacy expectations in observers who then judge that they too possess the

capabilities to master comparable activities. By the same token, observing others who are perceived to be of similar competence fail despite high effort lowers observers' judgments of their own capabilities (Brown & Inouye, 1978). Vicariously derived information alters perceived self-efficacy through ways other than social comparison. As previously noted, modeling displays convey information about the nature and predictability of environmental events. Competent models also teach observers effective strategies for dealing with challenging or threatening situations.

Verbal persuasion is widely used to get people to believe they possess capabilities that will enable them to achieve what they seek. Although social persuasion alone may be limited in its power to create enduring increases in self-efficacy, it can contribute to successful performance if the heightened appraisal is within realistic bounds. Persuasive efficacy influences, therefore, have their greatest impact on people who have some reason to believe that they can produce effects through their actions (Chambliss & Murray, 1979a, 1979b). To the extent that persuasive boosts in self-efficacy lead them to try hard enough to succeed, such influences promote development of skills and a sense of personal efficacy.

People rely partly on information from their *physiological state* in judging their capabilities. They read their visceral arousal in stressful and taxing situations as an ominous sign of vulnerability to dysfunction. Because high arousal usually debilitates performance, people are more inclined to expect success when they are not beset by aversive arousal than if they are tense and viscerally agitated. In activities involving strength and stamina, people read their fatigue, aches, and pains as indicants of physical inefficacy.

Information that is relevant for judging personal capabilities—whether conveyed enactively, vicariously, persuasively, or physiologically—is not inherently enlightening. Rather, it becomes instructive only through cognitive appraisal. The cognitive processing of efficacy information concerns the types of cues people have learned to use as indicators of personal efficacy and the inference rules they employ for integrating efficacy information from different sources (Bandura, 1981).

The aim of a comprehensive theory is to provide a unifying conceptual framework that can encompass diverse modes of influence known to alter behavior. In any given activity skills and self-beliefs that ensure optimal use of capabilities are required for successful functioning. If self-efficacy is lacking, people tend to behave ineffectually, even though they know what to do. Social learning theory postulates a common mechanism of behavioral change—different modes of influence alter coping behavior partly by creating and strengthening self-percepts of efficacy.

The explanatory and predictive power of this theory was tested in a series of experiments in which severe snake phobics received treatments relying on enactive, vicarious, emotive, and cognitive modes of influence (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980). This type of disorder permits the most precise tests of mechanisms of change because participants rarely, if ever, have contact with reptiles while the treatment is in progress. Consequently, the changes accompanying treatment are not confounded by uncontrolled experiences arising from contact with the threats between sessions. In each study in this series, the level, strength, and generality of coping self-efficacy for a variety of threatening tasks was measured prior to and after treatment.

In the treatment employing enactive mastery as the principal vehicle of change, phobics are assisted by performance induction aids in dealing with what they fear. As treatment progresses the provisional aids are withdrawn, and self-directed mastery experiences are then arranged to authenticate and generalize personal efficacy. In the vicarious mode of treatment, phobics merely observe the model perform progressively more threatening activities without any adverse effects. In the third treatment tested, which draws heavily on a cognitive modality (Kazdin, 1973), phobics generate cognitive scenarios in which multiple models of differing characteristics cope with and master threatening activities. As a further test of the generality of efficacy theory, an emotive-oriented procedure was also examined. In this desensitization treatment people visualize threatening scenes while deeply relaxed until they no longer experience any anxiety arousal. Imaginal conquest of fear and acquisition of a self-relaxation coping skill can boost perceived self-efficacy.

Results of these studies confirm that different modes of influence all raise and strengthen self-percepts of efficacy. Moreover, behavior corresponds closely to level of self-efficacy change, regardless of the method by which self-efficacy is enhanced (Figure 5). The higher the level of perceived self-efficacy, the greater the performance accomplishments. Strength of efficacy also predicts behavior change. The stronger the perceived ef-

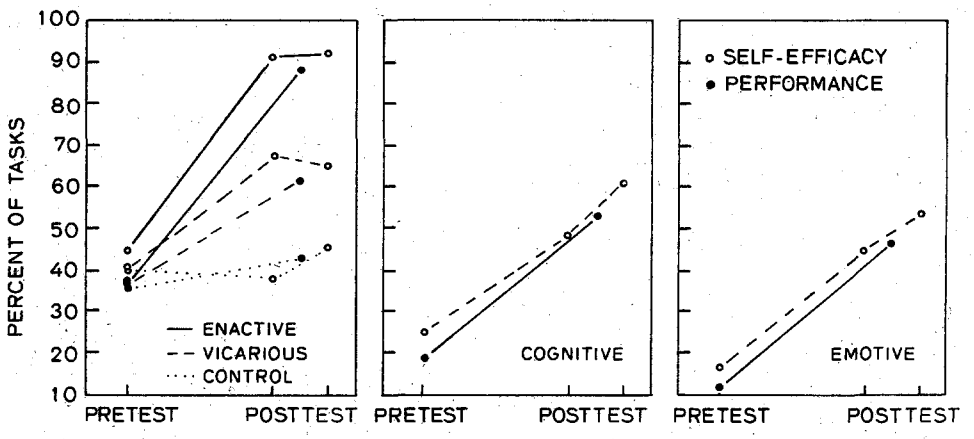

Figure 5. Level of perceived self-efficacy and coping behavior displayed by subjects toward threats after receiving treatments relying on either enactive, vicarious, emotive, or cognitive modes of influence. (In the posttest phase, level of self-efficacy was measured prior to and after the test of coping behavior. The scores represent the mean performance attainments with similar and generalization threats [Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980].)

ficacy, the more likely are people to persist in their efforts until they succeed. Consistent with self-efficacy theory, enactive mastery produces the highest, strongest, and most generalized increases in coping efficacy. The latter finding is corroborated by other comparative studies demonstrating that enactive mastery surpasses persuasive (Biran & Wilson, 1981), emotive (Katz, Stout, Taylor, Horne, & Agras, Note 3), and vicarious (Feltz, Landers, & Raeder, 1979) influences in creating strong self-percepts of efficacy.

Self-efficacy theory explains rate of change during the course of treatment as well (Bandura & Adams, 1977). Self-percepts of efficacy formed through partial mastery experiences at different points in treatment predict, at a high level of accuracy, subsequent performance of threatening tasks that subjects had never done before.

The degree of relationship between self-percepts of efficacy and action can be quantified in several ways. Correlations can be computed between aggregate scores of perceived self-efficacy and performance attainments. At a more particularized level of analysis, degree of congruence between self-percepts and action can be gauged by recording whether persons judge themselves capable of performing each of the various tasks using a cutoff strength value and computing the percentage of accurate correspondence between self-efficacy judgment and actual performance on individual tasks. Dichotomizing self-efficacy judgments on the basis of a minimal strength value inevitably loses some predictive information. The most precise microanalysis of congruence is provided by computing the probability of successful performance as a function of strength of perceived self-efficacy. All three indexes reveal a close relationship between self-percepts of efficacy and action regardless of whether efficacy is instated by enactive mastery, vicarious experience, cognitive coping, or elimination of anxiety arousal (Bandura, 1977a; Bandura et al., 1980).

Influences that operate through nonperformance modes are of particular interest because they provide no behavioral information for judging changes in one's self-efficacy. Persons have to infer their capabilities from vicarious and symbolic sources of efficacy information. Even in the case of enactively instated self-efficacy, performance is not the genesis of the causal chain. Performance includes among its determinants self-percepts of efficacy. We know from the research of Salomon (in press), for example, that self-perceived learning efficacy affects how much effort is invested in given activities and what levels of performance are attained. Thus, judgments of one's capabilities partly determine choice of activities and rate of skill acquisition, and performance mastery, in turn, can boost perceived self-efficacy in a mutually enhancing process. It is not as though self-percepts of efficacy affect future performances but play no role whatsoever in earlier performance attainments. Questions about causal ordering of factors arise in enactively based influences when interactive processes are treated as linear sequential ones and causally prior self-efficacy determinants of past performance accomplishments go unmeasured.

Predictive Generality Across Domains of Functioning

The preceding experiments examined the explanatory and predictive generality of self-efficacy theory across different modes of influence applied to the same type of dysfunction. Tests of the generality of this theory have been extended to diverse areas of functioning. One study designed for this purpose included severe agoraphobics, whose lives were markedly constricted by profound coping inefficacy that makes common activities seem filled with danger (Bandura et al., 1980).

The treatment included group sessions in which the participants were taught how to identify situational and ideational elicitors of anxiety, how to manage anxiety arousal through thought and self-relaxation, and how to use proximal goal setting in gaining coping skill. But the critical ingredient of treatment involved field mastery experiences. Therapists, who accompanied the agoraphobics into community settings, drew on whatever performance induction aids were required to enable their clients to cope successfully with what they dreaded. As treatment progressed therapists reduced their guided participation and assigned the clients progressively more challenging tasks to perform on their own.

Assessment of self-efficacy and performance accomplishments in previously dreaded situations—traveling by automobile, using elevators and escalators, climbing stairs to high levels, dining in restaurants, shopping in supermarkets, and venturing forth alone into public places—reveals substantial increases in perceived coping efficacy (Figure 6). In microanalyses conducted both prior to and at the completion of treatment, behavioral change corresponded closely to level of self-efficacy change.

A variety of studies applying different modes of influence to diverse domains of functioning speak further to the issue of perceived self-efficacy as a common mechanism mediating psychological changes. Perceived self-efficacy predicts degree of change in diverse types of social behavior (Kazdin, 1979; Barrios, Note 4); varieties of phobic dysfunctions (Biran & Wilson, 1981; Bourque & Ladouceur, 1980); stress reactions and physiological arousal (Bandura et al., in press); physical stamina (Weinberg et al., 1979; Weinberg, Yukelson, & Jackson, 1980); self-regulation of addictive behavior (Condiotte & Lichtenstein, 1981; DiClemente, 1981); achievement strivings (Bandura & Schunk, 1981; Collins, 1982; Schunk, 1981); and career choice and development (Betz & Hackett, 1981; Hackett & Betz, 1981; Hackett, Note 5). In these diverse lines of research, predictive success is achieved across time, settings, performance variants, expressive modalities, and vastly different domains of psychological functioning. Moreover, measures of self-percepts of efficacy using the microanalytic approach predict variations in level of changes produced by different modes of influence, variations among persons receiving the same mode of influence, and even variations within individuals in regard to the particular tasks they are likely to master or fail (Bandura, 1977a; Bandura et al., 1980). Some of these areas of research are discussed more fully because they clarify different aspects of the mediating self-efficacy mechanism.

Although self-efficacy judgments are functionally related to action, a number of factors can affect the strength of the relationship. Discrepancies may arise because of faulty self-knowledge, misjudgment of task requirements, unforeseen situational constraints on action, disincentives to act on one's self-percepts of efficacy, ill-defined global measures of perceived self-efficacy or inadequate assessments of performance, and new experiences that prompt reappraisals of self-efficacy in the time elapsing between probes of self-efficacy and action. These and other sources of discordance are discussed fully elsewhere (Bandura, in press) and will not be reviewed here.

Perceived Self-Regulatory Efficacy

Exercise of influence over one's own behavior is not achieved by a feat of willpower. Self-regulatory capabilities require tools of personal agency and the self-assurance to use them effectively (Bandura, in press). People who are skeptical of their ability to exercise adequate control over their actions tend to undermine their efforts in situations that tax capabilities. Relapses in self-regulation of refractory consummatory behavior provide a familiar example.

Marlatt and Gordon (1980) have postulated a common relapse process in heroin addiction, alcoholism, and smoking in which perceived self-regulatory efficacy operates as a contributing factor. People who have the skills and assurance in their coping efficacy mobilize the effort needed to succeed in high-risk situations. Mastery of problem situations further strengthens self-regulatory efficacy. In contrast, when coping skills are underdeveloped and poorly used because of disbelief in one's efficacy, a relapse will occur. Faultless self-

control is not easy to come by for pliant activities, let alone for addictive substances. Nevertheless, those who perceive themselves to be inefficacious are more prone to attribute a slip to pervasive self-regulatory inefficacy. Further coping efforts are then abandoned, resulting in a total breakdown in self-control.

Studies of behavior that is amenable to change but difficult to sustain over an extended period confirm that perceived inefficacy increases vulnerability to relapse. In this research, investigators measured the self-judged efficacy of cigarette smokers to resist smoking under various social and stressful inducements after they had quit smoking through various means (DiClemente, 1981; McIntyre et al., Note 2). Although all participants achieved the same terminal behavior, they did not exhibit the same level of self-regulatory efficacy. Compared to abstainers, relapsers expressed lower self-efficacy at the end of treatment about their ability to resist smoking under subsequent instigating conditions. The higher the perceived self-regulatory efficacy, the more successfully smoking was checked during the follow-up period. In con-

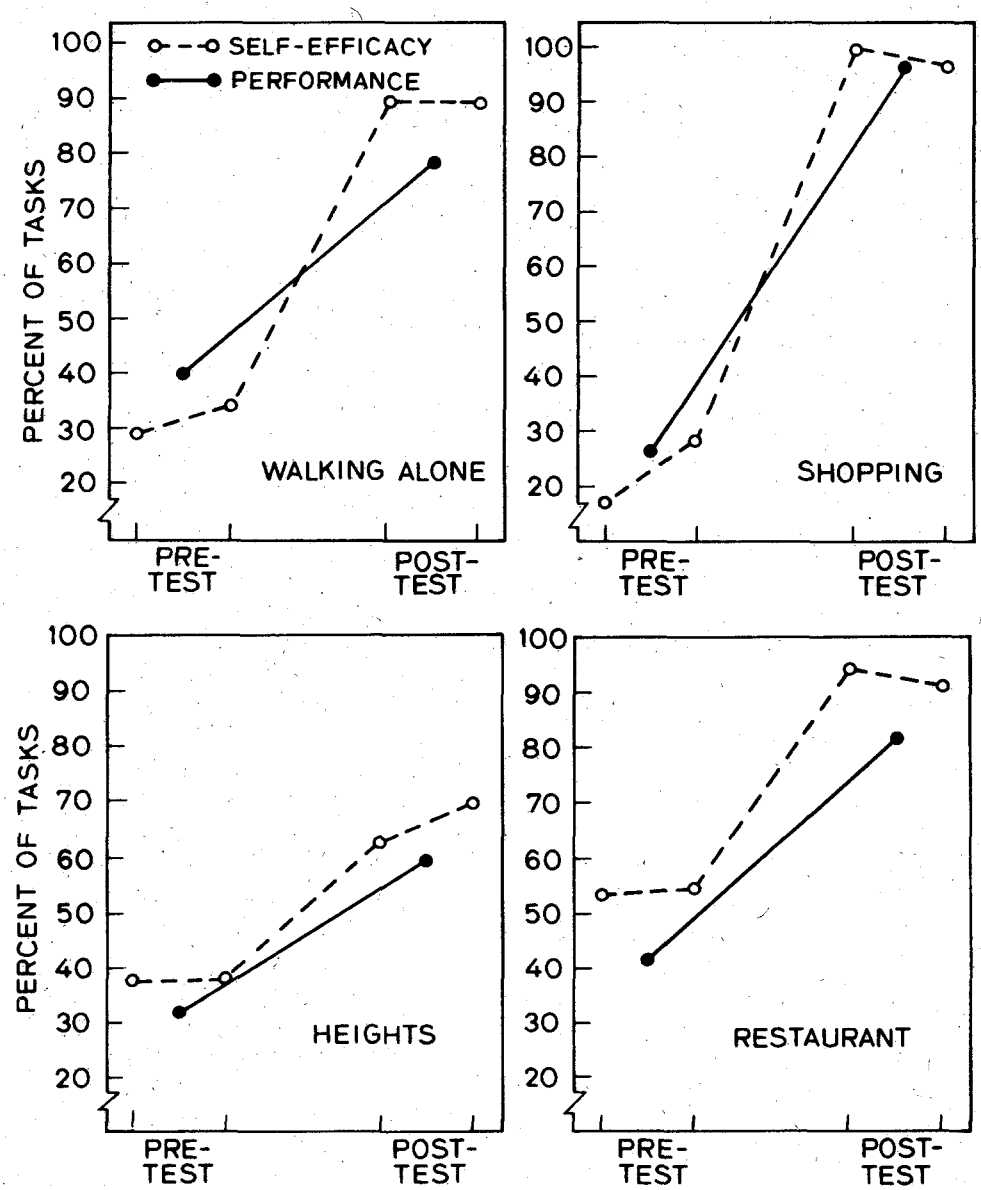

Figure 6. Level of perceived self-efficacy and coping behavior displayed by subjects in different areas of functioning before and after receiving treatment (Bandura, Adams, Hardy, & Howells, 1980).

trast, neither demographic factors nor smoking history and degree of physical dependence on nicotine differentiated relapsers from abstainers.

In a microanalysis of the relation between self-percepts of efficacy and smoking, Condiotté and Lichtenstein (1981) assessed, at the completion of treatment, subjects' perceived capability to resist the urge to smoke in a variety of situations. Perceived self-regulatory efficacy predicted months later which participants would relapse, how soon they would relapse, and even the specific situations in which they experienced their first slip. Moreover, perceived self-efficacy at the end of treatment predicted how participants were likely to respond to a subsequent relapse, should it occur. The highly self-efficacious subjects reinstated control following a slip, whereas the less self-efficacious ones displayed a marked decrease in perceived self-efficacy and relapsed completely. Evidence that changes in self-percepts of efficacy predict coping and self-regulatory behavior suggests that self-efficacy probes during the course of treatment can provide helpful guides for implementing a program of personal change.

Interactive Perceived Efficacy and Postcoronary Rehabilitation

Social environments may place constraints on what people do or may aid them to behave optimally. Whether their endeavors are socially impeded or supported will depend, in part, on how efficacious they are perceived to be. The impetus for interpersonal judgments of efficacy is strongest in close relationships involving interdependent consequences. This is because actions of a partner based on faulty self-percepts of efficacy can produce detrimental consequences for all concerned. Since risky actions are also the means of securing valued benefits, veridical mutual judgments of efficacy provide a reliable basis to promote advantageous endeavors and to dissuade foolhardy ones. Full understanding of how perceptions of efficacy affect courses of action under close social interdependencies requires analysis of interactive efficacy determinants.

Recovery from a heart attack presents an important problem in which to study both the impact of interactive efficacy and the contribution of self-percepts of efficacy to health-promoting habits. In recovering from a heart attack, the restoration of perceived physical efficacy is an essential ingredient in the process. The heart heals rapidly, but psychological recovery is slow for patients who believe they lack the physical efficacy to resume their customary activities. They avoid physical exertion and recreational activities that they previously enjoyed, they are slow to resume vocational and social life in the belief that they will overburden their debilitated cardiac capacity, and they fear that sexual activities will do them in. The rehabilitative task is to restore a sense of physical efficacy so that postcoronary patients can lead full, productive lives.

Physicians typically use one or more of the four principal sources of efficacy information to raise and strengthen perceptions of cardiac robustness in postcoronary patients. Enactive efficacy information is compellingly conveyed through strenuous treadmill exercises. Vicarious efficacy information is provided by enlisting the aid of former patients who exemplify active lives. Persuasive efficacy information is furnished by informing patients about what they are capable of doing. A heart attack is apt to give rise to overattentiveness to cardiac activity and misattribution of fatigue to an impaired heart. The meaning of physiological efficacy information is explained to ensure that patients do not misread their physiology, for example, by interpreting cardiac acceleration as portending a reinfarction.

As a first step toward clarifying some aspects of the efficacy restoration process, a research project being conducted in collaboration with Ewart, Taylor, DeBusk, and Reese is examining the impact of enactive and persuasive efficacy information on resuming physical activities. Several weeks after patients have experienced a myocardial infarction, their self-percepts of physical efficacy are measured for physical exertion, cardiac capability, emotional stress, and sexual activities.

Psychological recovery from a heart attack is a social, rather than an individual, matter. Because one spouse's notions about the other's physical capabilities can aid or retard the recovery process, the spouse's judgments of the patient's physical efficacy are measured under three levels of involvement in the treadmill activity. All of the patients being studied are men, so the wives' judgments of husbands' efficacy are tested: when she is uninvolved in the treadmill exercises; when she is present to observe the husband's stamina as he performs on the treadmill under increasing workloads; or when she performs the strenuous treadmill exercises, to experience personally the physical demands of the task, whereupon she observes her husband do the same. In the informative consul-

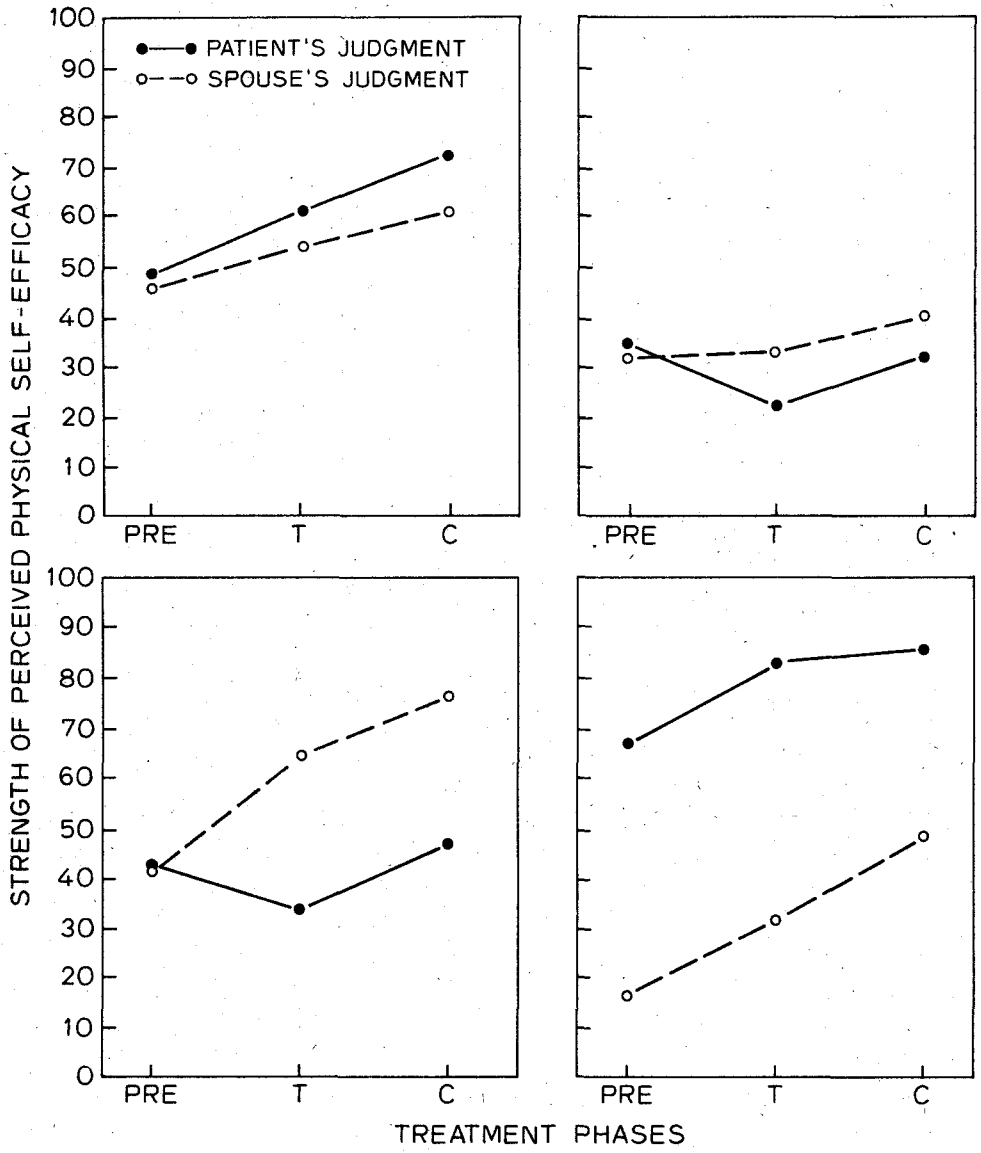

Figure 7. Illustrative variations in patterns of perceived physical efficacy for different couples at pretest (PRE), after treadmill exercises (T), and after the combined influence of treadmill exercises and medical consultation (C).

tation with the medical staff, which follows the treadmill activity, couples receive information about the patient's cardiac functioning and its relation to physical, vocational, and sexual activity.

Self-efficacy probes are taken at each step in the process. In addition, before and after the efficacy enhancing program and six months later, patients' cardiac output and physical activity level are monitored continuously for several days to determine how much they are exerting themselves. Preliminary findings reveal that treadmill exercises and medical consultation have differential impact on self-percepts of physical efficacy in different domains of functioning. Microanalytic measures of perceived self-efficacy thus provide refined feedback of what various treatments are doing.

Wives who are actively involved in the test of their husbands' physical stamina judge their physical efficacy more highly than if they do not observe their treadmill performances. Patterns of perceived efficacy vary, sometimes widely, for different couples. Figure 7 illustrates the major variations. The recovery process is expected to be fastest under congruent high efficacy; slowest under congruent low efficacy; and at an intermediate level when the patient and the spouse differ in judgments of the patient's capability to resume daily activities.

Cultivating Intrinsic Interest Through Development of Self-Efficacy

Most of the things people enjoy doing for their own sake originally had little or no interest for them. But under appropriate learning experiences, almost any activity, however silly it may appear to many observers, can become imbued with consuming significance. The process by which people develop interest in activities in which they initially lack skill, interest, and self-efficacy is an issue of some importance. Positive incentives are widely used to promote such changes. Some writers (Deci, 1975; Lepper & Greene, 1978) have questioned the wisdom of such an approach, on the grounds that rewarding people for engaging in an activity is more likely to reduce than to increase subsequent interest in it. Extrinsic incentives presumably decrease interest by weakening competency drives or by shifting causal attributions for performance from internal motivators to external rewards.

The effects of extrinsic incentives have received extensive study. Results show that rewards can increase interest in activities, reduce interest, or have no effect (Bates, 1979; Kruglanski, 1975; Lepper, 1980; Ross, 1976). In evaluating the role of incentives in human functioning, it is important to distinguish between whether incentives are used to manage performance or to cultivate personal efficacy.

TASK-CONTINGENT INCENTIVES

Extrinsic rewards are most likely to reduce interest when they are given merely for performing over and over again an activity that is already of high interest (Condry, 1977; Lepper & Greene, 1978). In such situations rewards are gained regardless of the level or quality of performance. However, even under the limiting conditions wherein rewards are believed to produce reductive effects, incentives sometimes enhance interest (Arnold, 1976; Davidson & Bucher, 1978), boost low interest but diminish or do not affect high interest (Calder & Staw, 1975; Loveland & Olley, 1979; McLoyd, 1979), or reduce low interest but do not affect high interest (Greene, Sternberg, & Lepper, 1976). Apparently a wide array of other factors—level of preexisting interest and ability, magnitude and salience of rewards, type of activity, degree of reward contingency, accompanying social messages—can radically alter or override the effects of rewards given simply for undertaking a task.

COMPETENCE-CONTINGENT INCENTIVES

The controversy over the effects of performance-irrelevant reward on high interest has led to neglect of the important issue of whether incentives for performance attainments cultivate interest and self-percepts of efficacy. Rewards for task mastery, which reflect on personal efficacy, should be distinguished from performance-contingent rewards gained by performing routine activities. A garment worker paid on a piece-rate basis for sewing shirts day in and day out is unlikely to develop a growing fondness for sewing, even though rewards are highly contingent on performance.

Conceptual analyses of intrinsic interest within the framework of social learning theory (Bandura, in press) and the theory of intrinsic motivation (Deci, 1975; Lepper & Greene, 1978) assign perceived competence a mediating role. The alternative theoretical approaches, however, postulate somewhat different underlying mechanisms. In cognitive evaluation theory (Deci, 1975), interest is an expression of an inborn drive for competence and self-determination; in attribution theory (Bem, 1972; Lepper & Greene, 1978), interest is a product of retrospective judgments of the causes of one's performances; in social learning theory (Bandura, 1981, in press), interest grows from satisfactions derived from fulfilling internal standards and from perceived self-efficacy gained from performance accomplishments and other sources of efficacy information.

There are several ways in which incentives for task mastery can contribute to the growth of interest and self-efficacy. Positive incentives foster performance accomplishments. Gaining knowledge and skills that enable one to fulfill personal standards of merit tend to heighten interest and a firm sense of personal efficacy. Success in attaining desired outcomes through challenging performances can further verify existing competencies. This is because people usually do not perform maximally, though they possess the constituent skills. It is under incentives that test upper limits that people find out what they are able to do. By mobilizing high effort, incentives can help to substantiate talents, even though no new skills are acquired in the process.

Rewards also assume efficacy informative value when competencies are difficult to gauge from performance alone, which is often the case. To complicate further the competence validation process, most activities involve diverse facets so that perceived adequacy may vary widely, depending

on how the differing aspects are subjectively weighted. Because of these ambiguities level of reward imparts social information on the quality of performance. In this process competent performances are perceived as the reason for the rewards, rather than the rewards being viewed as the cause of competent performance (Karniol & Ross, 1977).

Several lines of research confirm that positive incentives promote interest when they enhance or authenticate personal efficacy. Both children and adults maintain or increase their interest in activities when rewarded for performance attainments, whereas their interest declines when they are rewarded for undertaking activities irrespective of how well they perform (Boggiano & Ruble, 1979; Ross, 1976). The larger the extrinsic reward for performances signifying competence, the greater the increase in interest in the activity (Enzle & Ross, 1978). Even incentives for undertaking a task, rather than for performance mastery, can raise interest if engagement in the activity provides information about personal competence (Arnold, 1976). When material reward for each task completion is accompanied by self-verbalization of competence, children sustain high interest in the activity (Sagotsky & Lewis, Note 6).

PROXIMAL SELF-MOTIVATION

Contingent incentives are not necessarily the best vehicle for enlisting the type of sustained involvement in activities that builds interest and self-efficacy where they are lacking. In social learning theory an important cognitively based source of motivation operates through the intervening processes of goal setting and self-evaluative reactions (Bandura, 1977b, in press). This form of self-motivation, which involves internal comparison processes, requires personal standards against which to evaluate performance. By making self-satisfaction conditional on a certain level of performance mastery, persons create self-incentives for their efforts.

Self-motivation is best summoned and sustained by adopting attainable subgoals that lead to large future ones. Whereas proximal subgoals provide immediate incentives and guides for action, distal goals are too far removed in time to effectively mobilize effort or to direct what one does in the here and now. Proximal goals can also serve as an important vehicle in the development of self-percepts of efficacy. Without standards against which to measure their performance, people have little basis for judging how they are doing or for gauging their capabilities. Subgoal attainments provide clear markers of progress along the way to verify a growing sense of self-efficacy.

There are at least two ways in which proximal goals might contribute to enhancement of interest in activities. When people aim for, and master, desired levels of performance, they experience a sense of satisfaction (Locke, Cartledge, & Knerr, 1970). The satisfactions derived from subgoal attainments can build intrinsic interest. When performances are gauged against distal goals, similar accomplishments may prove disappointing because of wide disparities between current performance and lofty future standards. As a result interest fails to develop, even though skills are being acquired in the process. As already noted, a sense of personal efficacy in mastering tasks is more apt to spark interest in them than is self-perceived inefficacy in performing competently.

That proximal self-motivation can build intrinsic interest in disvalued activities receives support from a study in which children who exhibited gross deficits and disinterest in mathematical tasks pursued a program of self-directed learning under conditions involving either proximal subgoals, distal goals, or no reference to goals (Bandura & Schunk, 1981). Under proximal subgoals children progressed rapidly in self-directed learning, achieved substantial mastery of mathematical operations, and developed a strong sense of self-efficacy in solving arithmetic problems (Figure 8). Distal goals had no demonstrable effects. In addition to its other benefits, goal proximity fosters veridical self-knowledge of capabilities, as reflected in high congruence between judgments of mathematical self-efficacy and subsequent mathematical performance.

As shown in Figure 9, it was mainly children in the proximally self-motivated condition, all of whom felt highly efficacious, who displayed the notable level of intrinsic interest. Children in the other conditions generally expressed self-doubts concerning their capabilities and showed little spontaneous interest in solving arithmetic problems. Regardless of treatment conditions, self-percepts of moderate to high strength were positively related to interest.

The relationship of the growth functions of self-efficacy and interest warrants systematic investigation. There may exist some temporal lag between newly acquired self-efficacy and corresponding growth of interest in activities that are disvalued or even disliked. In the temporal lag pattern, self-efficacy fosters mastery experiences

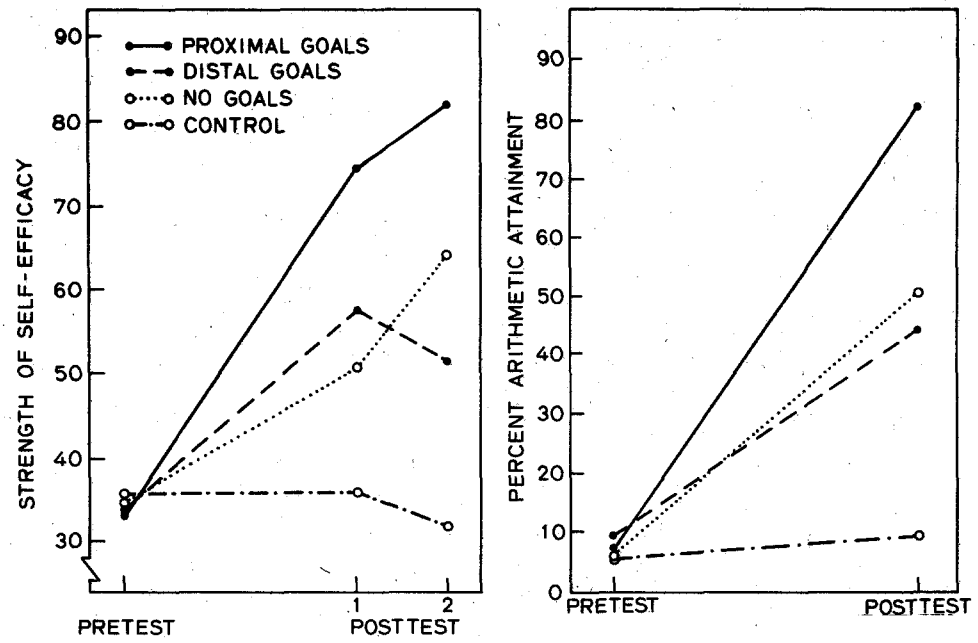

Figure 8. The left panel shows the strength of children's self-percepts of arithmetic efficacy at the beginning of the study (pretest) and before (1) and after (2) taking the arithmetic posttest; the right panel displays the children's level of achievement on the arithmetic test before and after the self-directed learning (Bandura & Schunk, 1981).

that, over a period of time, provide self-satisfactions conducive to growth of interest. If, in fact, effects follow such a temporal course, then increased interest would emerge as a later, rather than as an instant, consequence of enhanced self-efficacy. The threshold notion suggests an alternative pattern. It may require at least moderately high self-efficacy to generate and sustain interest in an activity, but interest is not much affected by small variations above or below the threshold level. Indeed, supreme self-assurance may render activities unchallenging and thus uninteresting. Both strength and optimal level of perceived self-efficacy correlate with intrinsic interest, but the threshold notion yields the more consistent positive relationships (Bandura & Schunk, 1981; Schunk, Note 7). Temporal lag and threshold effects are by no means incompatible. In fact both probably operate in the developmental process.

SELF-EFFICACY DETERMINANTS OF CAREER INTERESTS AND PURSUITS

Choices during formative periods shape life paths through selective development of competencies, interests, and affiliative preferences. Hackett and Betz (1981) have been developing a causal model of career choice in which perceived self-efficacy functions as a major mediator. One of the important issues addressed in this line of research is how the career interests and pursuits of women are constricted by self-beliefs that traditionally male oc-

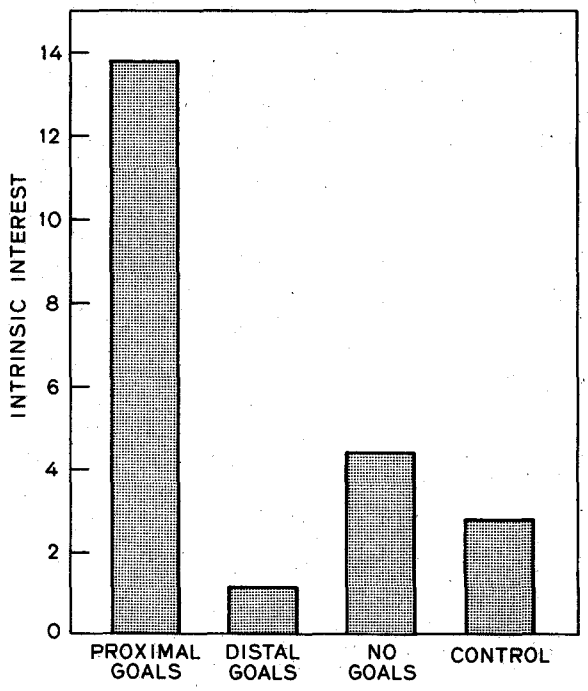

Figure 9. Average number of arithmetic problems children in the different conditions chose to solve when given free choice of activities (Bandura & Schunk, 1981).

cupations are inappropriate for them because they lack the capabilities to master requisite skills.

Efficacy analyses of career decision making (Betz, 1981) reveal that males perceive themselves to be equally efficacious for traditionally male and female vocations. In contrast, females judge themselves highly efficacious for the type of occupations traditionally held by women, but inefficacious in mastering the educational requirements and job functions of vocations dominated by men. These differential perceptions of personal efficacy are especially striking because the groups do not differ in their actual verbal and quantitative ability on standardized tests. It is not the subskills that selected college students possess, but how they perceive and use them that makes the difference. Regardless of sex, level of perceived self-efficacy correlates positively with range of career options seriously considered and the degree of interest shown in them.

Hackett (Note 5) has devoted special attention to perceived mathematical self-efficacy because modern technologies have made quantitative skills increasingly important to a wide range of career options and professional advancement. Using a path analysis, Hackett found that sex, sex role socialization, and high school preparation affect perceived self-efficacy in quantitative capabilities. Perceived self-inefficaciousness in dealing with numbers in turn affects mathematical anxiety and math relatedness of college major.

The causally prior contribution of perceived efficacy to socialization practices and educational preparation remains an important problem of future research to determine through longitudinal analysis. It follows from the present model of career development that parental career-related efficacy will influence the range of vocational options they consider viable for their offspring. Students' differential self-percepts of efficacy for mastering occupational entry requirements are likely to influence what types of courses they choose to pursue during their secondary educational preparation. Societal practices require of women a robust sense of self-efficacy not only to enter careers dominated by men, but to fulfil the heavy demands arising from dual workloads of career and household.

Self-Efficacy Conception of Fear Arousal

Perceptions of self-efficacy affect emotional reactions as well as behavior. This is especially true of anxiety and stress reactions to unfamiliar or potentially aversive events. Self-efficacy theory suggests an alternative way of looking at human anxiety. Psychodynamic theories generally attribute anxiety to intrapsychic conflicts over the expression of tabooed impulses. The external object of anxiety is considered to be of limited significance because the threat posed by the impulse can be projected onto any number of things. In this approach anxiety is rooted in the prohibited impulse.

Conditioning theory assumes that formerly neutral events acquire fear-provoking properties by association with painful experiences. This theory externalizes the cause in the stimulus—It is the stimulus that is said to become aversive. If a person develops a phobia of mountain driving as a result of running into a stately roadside redwood, it is not the road that is changed by the aversive experience. Rather, it is perceived competence in driving and anticipatory thought patterns that undergo change.

From the social learning perspective, it is mainly perceived inefficacy in coping with potentially aversive events that makes them fearsome. To the extent that one can prevent, terminate, or lessen the severity of aversive events, there is little reason to fear them. Hence experiences that increase coping efficacy can diminish fear arousal and increase commerce with what was previously dreaded and avoided.

A sense of controllability can be achieved either behaviorally or cognitively (Averill, 1973; Lazarus, 1980; Miller, 1979). In behavioral control individuals take actions that forestall or modify aversive events. In cognitive control people believe they can manage environmental threats, should they arise. These two forms of controllability are distinguished because the relationship between actual and self-perceived coping efficacy is far from perfect. Indeed, there are many competent people who are plagued by a sense of inefficacy, and many less competent ones who remain unperturbed by impending threats because they are self-assured of their coping capabilities.

BEHAVIORAL CONTROL

The effects of behavioral control on fear reduction and stress responses have been amply documented with both children and adults. Ability to exercise behavioral control over potentially aversive events eliminates or decreases autonomic reactions to them (Gunnar-vonGnechten, 1978; Miller, 1979).

Control over events makes them predictable, thus reducing uncertainty, which in itself can be ameliorative. It might, therefore, be argued that it is predictability, rather than behavioral mastery, that is stress reducing. However, behavioral control decreases arousal over and above any benefits derived from the ability to predict the occurrence of stressors. If anything, having foreknowledge of when aversive events will occur without being able to do anything about them increases anticipatory stress reactions (Gunnar, 1980; Miller, 1981). But since predictability signals safety as well as danger (Seligman & Binik, 1977), it can have opposite effects at different points in time—raising anticipatory arousal just prior to stressful events while reducing arousal during safe interim periods.

Being able to manage what one fears can diminish arousal because the capability is used to reduce or to prevent pain. But there is more to the process of stress reduction by behavioral control than simply curtailing painful stimuli. In some forms of behavioral mastery, previously frightening events occur undiminished, but they become nonthreatening when activated personally (Gunnar-vonGnechten, 1978). Here it is the personal agency of causality, not curtailment of the events themselves, that reduces fear. And in situations in which the opportunity to wield control exists but is unexercised, it is the self-knowledge of coping efficacy, rather than its application, that reduces anxiety arousal (Glass, Reim, & Singer, 1971).

COGNITIVE CONTROL

A painful event has two arousal components to it—discomfort produced by the aversive stimulation and the thought produced arousal. It is the thought component—the arousal generated by repetitive perturbing ideation—that accounts for much of human distress. As noted earlier, people who judge themselves inefficacious dwell on their coping deficiencies and view trying situations as fraught with peril. They not only magnify the severity of possible threats but worry about perils that rarely, if ever, happen. As a result they experience a high level of cognitively generated distress. Elevated arousal, in turn, heightens preoccupation with personal inefficacy and potential calamities.

Anticipatory thought that does not exceed realistic bounds has functional value in that it motivates development of competencies and plans for dealing with foreseeable threats. But to those who doubt their coping self-efficacy, the anxious anticipation can become a preoccupation that often far exceeds the objective hazards. In an intensive analysis of acute anxiety reactions, Beck, Laude, and Bohnert (1974) found that almost without exception, frightful cognitions occur just prior to the onset of anxiety attacks. The ideation often centers around profound coping inefficacy, which results in dreadful physical and social catastrophies.

Because stress-inducing thought plays a paramount role in human arousal, self-percepts of coping efficacy can reduce the level of arousal before, during, and after a trying experience. In laboratory studies of perceived control, people who believe that they can exercise some influence over aversive events display less autonomic arousal and impairment in performance than those who believe they lack any personal control, even though both groups are subjected to the same aversive stimulation (Averill, 1973; Miller, 1979, 1980). Mere belief in coping efficacy similarly increases ability to withstand pain (Neufeld & Thomas, 1977).

SELF-EFFICACY AS A MEDIATING MECHANISM

That perceived self-efficacy operates as a cognitive mechanism by which controllability reduces fear arousal receives support in the previously cited research designed to enhance coping efficacy in severe phobics (Bandura & Adams, 1977; Bandura et al., 1977; Bandura et al., 1980). In these studies, after completing the various forms of treatment, phobics designated the strength of their perceived efficacy in performing different tasks varying in threat value. During later behavioral tests they reported the intensity of fear arousal that they experienced in anticipation of performing each task and, again, while they were performing the activity.

In Figure 10 the intensity of fear arousal is plotted as a function of self-efficacy strength enhanced through four different modes of influence. People experience high anticipatory and performance distress on tasks in which they perceive themselves to be inefficacious, but as the strength of their self-judged efficacy increases, their fear arousal declines. At high strengths of self-efficacy, threatening tasks are performed with virtually no apprehensiveness.

Studies in which perceived self-efficacy is induced to differential levels (Bandura et al., in press) shed further empirical light on the notion that fear arousal arises from perceived coping inefficacy. Here the data of interest are the amount of distress phobics at different levels of perceived self-efficacy experience while performing the same

common task (Figure 11). The relationship between perceived inefficacy and subjective distress is replicated, regardless of whether self-percepts of efficacy are instated enactively or vicariously or whether the analysis involves anticipatory or performance fear based on intergroup or intrasubject changes. The less efficacious subjects judge themselves to be, the more fear they experience.

The generality of the relationship between perceived inefficacy and stress reactions is further corroborated in a study using physiological indices of arousal (Bandura et al., in press). Elevation in blood pressure and cardiac acceleration were measured in severe spider phobics during anticipation and performance of intimidating tasks corresponding to strong, medium, and weak strength of perceived self-efficaciousness. In the next phase of the study, self-percepts of efficacy were raised to maximal strength, whereupon autonomic reactions to the same tasks were again measured. Figure 12 shows the mean change from the baseline level in heart rate and blood pressure as a function of differential strength of self-percepts of efficacy.

Subjects were viscerally unperturbed by tasks that they regarded with utmost self-efficaciousness. On tasks about which they were moderately insecure concerning their coping efficacy, however, their heart rate accelerated and their blood

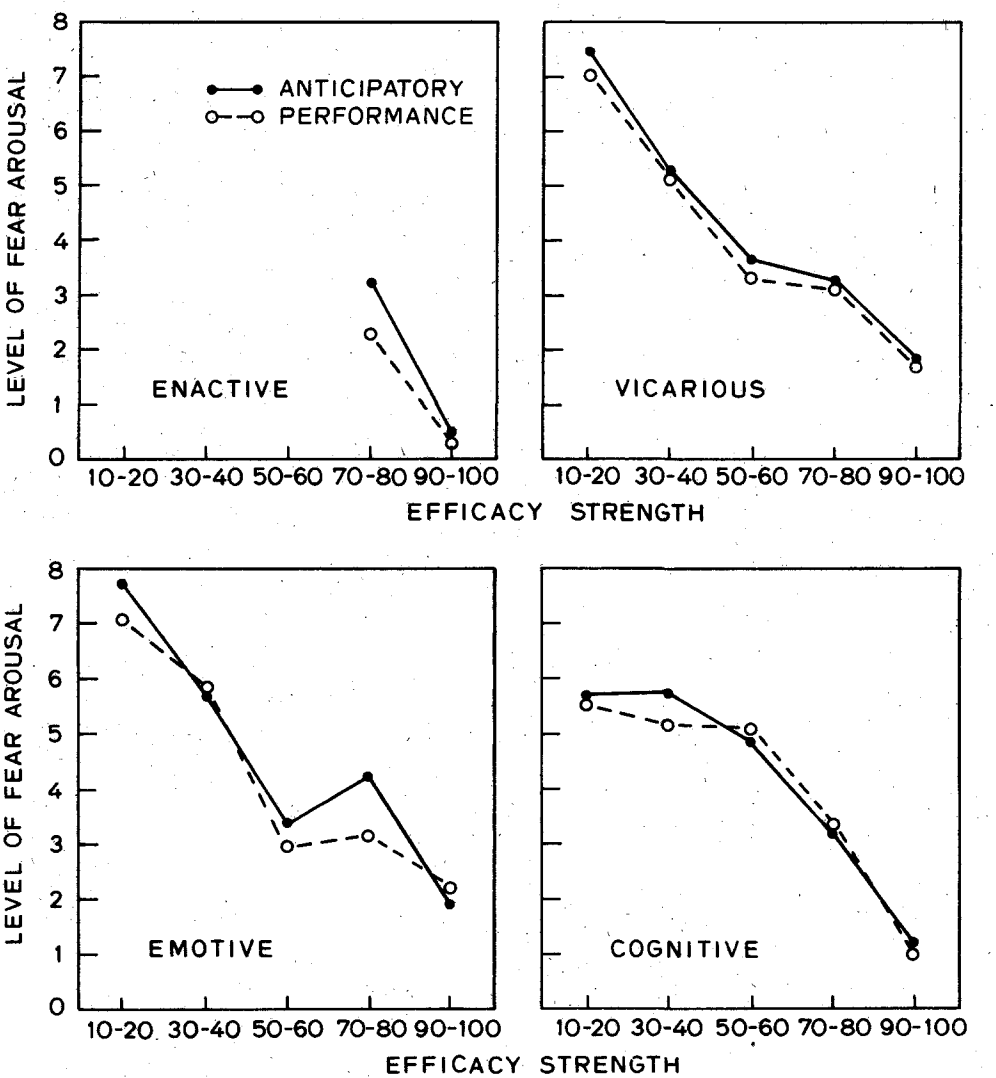

Figure 10. Relationship between strength of self-percepts of efficacy and level of anticipatory and performance fear arousal, after enhancement of self-efficacy through enactive, vicarious, emotive, or cognitive influence. (Participant modeling created such strong self-efficacy that there were only a few instances in which subjects receiving this form of treatment displayed self-percepts of efficacy below a strength value of 80 [Bandura, Adams, Hardy, & Howells, 1980].)

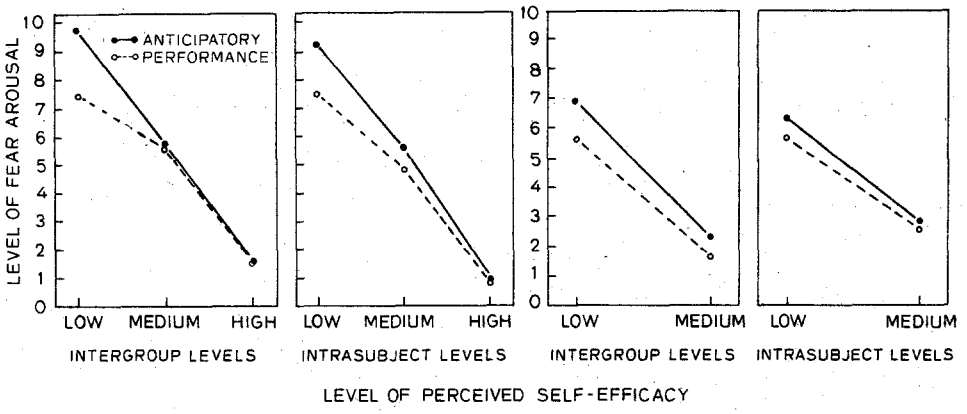

Figure 11. Mean intensity of anticipatory and performance fear arousal experienced by different groups of subjects at different levels of perceived self-efficacy (intergroup) and by the same subjects at successively higher levels of perceived self-efficacy (intrasubject). (Self-percepts of efficacy were raised through enactive mastery in the two left panels and through modeling in the two right panels [Bandura et al., in press].)

pressure rose during anticipation and performance of the activities. After self-percepts of efficacy were fully strengthened, these same task demands were managed unperturbedly.

When presented with tasks in the weak self-efficacy range, most subjects promptly dismissed them as too far beyond their coping capabilities to even attempt. Indeed, only a few subjects were able to do any of them. Although too few instances were available for a meaningful analysis of performance arousal, data from the anticipatory phase shed some light on how visceral reactions change when people preclude transactions with threats that they judge will overwhelm their coping capabilities. Cardiac reactivity subsided, but blood pressure continued to climb. After self-percepts of efficacy were strengthened to the maximal level, everyone performed these previously intimidating tasks without any visceral agitation.

Heart rate is likely to be affected more quickly than blood pressure by personal restructuring of stressful demands, which may explain the differential pattern of physiological reactivity at extreme self-inefficaciousness. There exists some evidence that catecholamines are released in different temporal patterns in response to external events (Mefford et al., 1981). Heart rate is especially sensitive to momentary changes in hormonal patterns, with

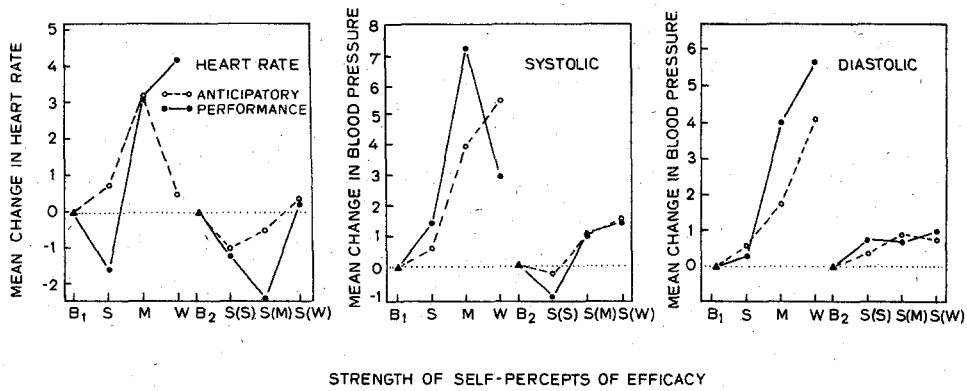

Figure 12. Mean change from the baseline level in heart rate and blood pressure during anticipatory and performance periods, as a function of differential strength of self-percepts of efficacy. (B refers to baseline, and S, M, and W signify strong, medium, and weak strengths of perceived self-efficacy, respectively. For each physiological measure the figure on the left in the panel shows the autonomic reactions related to self-percepts that differ in strength [performance arousal at weak self-efficacy is based on only a few subjects who exhibited partial performances]; the figure on the right in the same panel shows the autonomic reactions to the same set of tasks after self-percepts of efficacy were strengthened to maximal level [Bandura et al., in press].)

epinephrine, which is rapidly discharged, having a more pronounced effect on cardiac activity than on arterial pressure. Understanding of the physiological mechanisms by which self-percepts of efficacy give rise to stress reactions can be carried one step further by linking strength of perceived self-efficacy to hormonal releases.

Perceived self-efficacy and emotional arousal undoubtedly involve interactive (though asymmetrical) effects, with coping efficacy exercising the much greater sway. That is, perceived inefficaciousness in coping with potential threats leads people to approach such situations anxiously, and experiencing disruptive arousal may further lower their sense of efficacy that they will be able to perform skillfully. However, self-percepts of efficacy predict avoidance behavior, whereas autonomic arousal bears no uniform relationship to it (Bandura, 1978a; Bolles, 1972; Herrnstein, 1969; Leitenberg, Agras, Butz, & Wincze, 1971). People are thus much more likely to act on their self-percepts of efficacy than on visceral cues. This should come as no surprise, since information derived from past accomplishments and comparative appraisals is considerably more indicative of capableness than are the indefinite stirrings of the viscera. For example, accomplished actors interpret their brief nervousness before a play as a normative situational reaction, rather than as an indicant of personal incapability, and are in no way dissuaded by their viscera from going on stage and performing well what they assuredly know they can do once they get started.

Perceived Self-Inefficacy, Futility, and Despondency

Inability to influence events and social conditions that significantly affect one's life can give rise to feelings of futility and despondency as well as to anxiety. Self-efficacy theory distinguishes between two judgmental sources of futility. People can give up trying because they seriously doubt that they can do what is required. Or they may be assured of their capabilities but give up trying because they expect their efforts to produce no results due to the unresponsiveness, negative bias, or punitiveness of the environment. These two separate sources of futility have quite different causes and remedial implications. To change efficacy-based futility requires development of constituent competencies and strong percepts of self-efficacy. In contrast, to change outcome-based futility necessitates changing the social environment so that people can gain

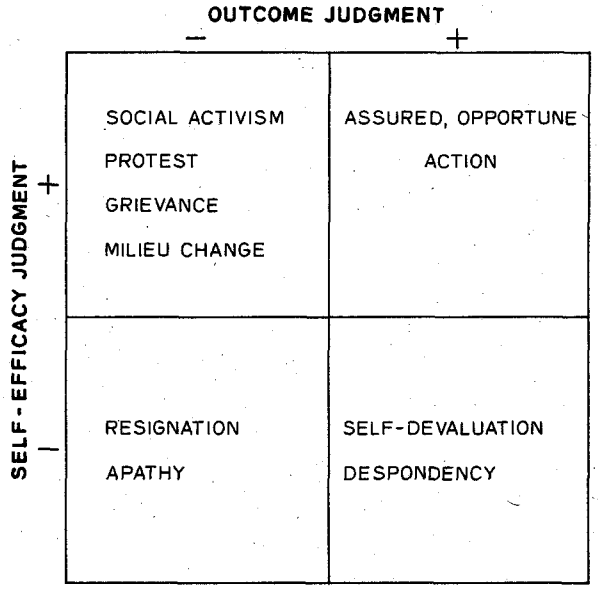

Figure 13. Interactive effects of self-percepts of efficacy and response outcome expectations on behavior and affective reactions.

the benefits of the competencies they already possess.

In any given instance behavior would be best predicted by considering both self-efficacy and outcome beliefs.[4] As can be seen in Figure 13, different patterns of outcome and efficacy beliefs are likely to produce different psychological effects. A high sense of personal efficacy and a responsive environment that rewards performance attainments fosters assured, active responsiveness. Consider next the pattern combining high self-efficacy

[4] The types of outcomes people expect depend largely on their judgments of how well they will be able to perform in given situations. For example, drivers who judge themselves inefficacious in navigating winding mountain roads will conjure up outcomes of wreckage and bodily injury, whereas those who are fully confident of their driving capabilities will anticipate sweeping vistas rather than tangled wreckage. Similarly the social reactions people anticipate for asserting themselves depend on their judgments of how adroitly they can do it. In social, intellectual, and athletic pursuits, those who judge themselves highly efficacious will anticipate successful outcomes and self-doubters will expect mediocre performances of themselves and, thus, less favorable outcomes. For activities in which outcomes are either inherent to the actions or are tightly linked by social codes, expected outcomes cannot be disembodied from the very performance judgments on which they are conditional. Outcome expectations are dissociable from self-efficacy judgments when extrinsic outcomes are loosely linked to level or quality of performance. Such structural arrangements permit social biases to come into play, so the same performance attainments may produce variable, and often inequitable, outcomes. Expected outcomes are also partially separable from self-efficacy judgments when extrinsic outcomes are fixed to a minimal level of performance, as when a designated level of work productivity produces a fixed pay but higher performance brings no additional monetary benefits.

with low environmental responsiveness. Efficacious persons who cannot achieve positive outcomes by their actions will not necessarily cease behaving. Those of low efficacy will give up readily, should their efforts fail to produce results. But self-efficacious individuals will intensify their efforts and, if necessary, try to change the environment.

The pattern in which competency goes unrewarded or is punished underscores the need to differentiate two levels of control—control over outcomes and control over the social systems that prescribe what the outcomes will be. In addressing this issue Gurin (in press) and Lacey (1979) give considerable attention to the exercise of influence over social systems, which typically receives scant notice in psychological analyses of controllability. Conditions combining high self-efficacy with environmental unresponsiveness tend to generate resentment, protest, and collective efforts to change existing practices (Bandura, 1973; Short & Wolfgang, 1972). Should change be difficult to achieve, given suitable alternatives people will desert environments that are unresponsive to their efforts and pursue their activities elsewhere.

Considering the joint influence of self-efficacy and outcome beliefs provides a basis for differentiating conditions conducive to apathy from those likely to induce despondency. When people have a low sense of personal efficacy and no amount of effort by themselves or comparative others produces results, they become apathetic and resigned to a dreary life. The pattern in which people perceive themselves as ineffectual but see similar others enjoying the benefits of successful effort is apt to give rise to self-disparagement and depression. Evident successes of others make it hard to avoid self-criticism.

In the original theory of learned helplessness (Seligman, 1975), people become inactive and depressed if their actions cannot affect what happens to them. Because they come to expect future responding to be futile, they no longer try, even in situations in which they can achieve results through their behavior. The reformulated theory (Abramson, Seligman, & Teasdale, 1978) shifts the causal locus of detrimental effects from belief that one's performances will go unrewarded (response–outcome independence) to belief that one cannot produce the performances. It singles out three dimensions in causal judgments of failure: Internality—Are failures ascribed to personal or to external factors? Stability—Are the ascribed causes enduring or transient? Generality—Are the causes believed to operate in many situations or only a few? Attributing one's failures to personal deficiencies of generalized and enduring nature, which is postulated to be most debilitating and depressing, constitutes a profound sense of personal inefficacy. Biases toward ascribing poor performances to basic personal deficiencies increase proneness to depression (Seligman, Abramson, Semmel, & von Baeyer, 1979).

The adequacy of performance attainments depends on the personal standards against which they are gauged. A comprehensive theory of depression must therefore be concerned not only with the perceived causality of failure but also with internal standards by which attainments will be self-judged as successes or as failures to begin with. Depressive reactions often arise from stringent standards of self-evaluation, which make objective successes personal failures. Individuals who are prone to depression impose on themselves high performance demands and devalue their accomplishments because they fall short of their exacting standards (Kanfer & Hagerman, 1980; Rehm, 1977; Simon, Note 8).

A theory must specify when perceived inefficacy will give rise to anxiety or despondency. The nature of the outcomes over which personal control is sought is one differentiating factor. People experience anxiety when they perceive themselves ill equipped to manage potentially injurious events. Attenuation or control of *aversive outcomes* is central to anxiety. People are saddened and depressed by their perceived inefficacy in gaining highly valued outcomes. Irreparable loss or failure to gain desired *rewarding outcomes* figures prominently in despondency. In the extreme cases individuals become so chronically preoccupied with self-depreciation and their sense of worthlessness that the pursuit of personal satisfactions becomes futile (Beck, 1973). There are certain situations, of course, in which perceived inefficacy in gaining highly valued outcomes can be anxiety provoking as well. When the valued outcomes one seeks also serve to forestall future aversive events, as when failure to secure a job jeopardizes one's livelihood, perceived inefficacy is both distressing and depressing. Because of the interdependence of events, both apprehension and despair often accompany perceived personal inefficacy.

Undermining Self-Efficacy by Relinquishing Personal Control

When personal control is easy to exercise and enables one to deal effectively with everyday events,

it is highly desired. Indeed, in laboratory studies in which aversive stimuli can be controlled by simple responses requiring neither skills nor expenditure of effort and entailing no risks, controllability is decidedly preferred (Miller, 1979). But there is an onerous side to personal control that is rarely, if ever, incorporated in most of the paradigms designed to study personal control. Self-development of efficaciousness requires mastery of knowledge and skills that can be attained only through long hours of arduous work. This often necessitates sacrificing many immediate rewards. Moreover, maintaining proficiency in given endeavors, which constantly change with social and technological advances, demands continued heavy investment of time, effort, and resources.

In addition to the work of self-development, in many situations the exercise of personal control carries heavy responsibilities and risks. For example, presidents of corporations are granted considerable controlling power, but they must bear personal responsibility for the negative consequences of their decisions and actions, some of which have widespread repercussions. These burdensome aspects dull the appetite for personal control. Attractive incentives, privileges, and heady social rewards are therefore needed to get people to seek control involving complicated skills, laborious responsibilities, and heavy risks.

PROXY CONTROL

People are not averse to relinquishing control over events that affect their lives in order to free themselves of the performance demands and hazards that the exercise of control entails. Rather than seeking personal control, they seek their security in proxy control—wherein they can exert some influence over those who wield influence and power. Part of the price of proxy control is restriction of one's own efficacy and a vulnerable security that rests on the competencies and favors of others.

Perceived inefficacy fosters dependence on proxy control, which further reduces opportunities to build the requisite skills for efficacious action. The influential role of comparative self-ability evaluation in proxy control is revealed in studies by Miller and her associates (Miller, 1980). People who are led to believe that they possess superior coping ability handle potential threats themselves, whereas those who believe themselves to be less skilled readily yield control to others to cope with the aversive environment. The dependent ones enjoy the protective benefits without the performance demands and attendant stresses, and the controllers do the work and suffer the distress over risks of failure.

UNDERMINERS OF PERSONAL EFFICACY

The preceding discussion focused on personal inefficacy arising from the costs and demands of efficacious behavior. Many factors operate in everyday life to undermine efficacious use of the knowledge and skills that people possess. In an informative program of research on illusory incompetence, Langer (1979) has given us a better understanding of the diverse conditions that impair the exercise of capabilities: Situational factors that often accompany poor performance can in themselves instill a sense of incompetence that is unwarranted. The mere presence of a highly confident individual undermines effective use of routine skills. Attending to what is strange in new tasks, rather than what is familiar and clearly within one's range of capability, may similarly hinder performance. And when people are cast in subordinate roles or are assigned inferior labels, implying limited competence, they perform activities at which they are skilled less well than when they do not bear the negative labels or the subordinate role designations.

The intervening mechanism through which demoralizing conditions undermine effective use of well-established skills remains to be clarified. Studies in which self-percepts are measured under induced illusory self-efficacy suggest that perceived inefficacy, with its concomitant effects on choice behavior, effort expenditure, persistence, and self-debilitating thought, may be the operative mechanism. This evidence comes from experiments demonstrating that changes in physical stamina in competitive situations are partly mediated through self-percepts of efficacy (Weinberg et al., 1979; Weinberg et al., 1980). The lower the illusorily instated self-percepts of physical efficacy, the weaker the competitive endurance in new physical activities. Even the mere sight of a formidable looking oponent instills lower self-percepts of efficacy than does one who looks less impressive. As might be expected preexisting self-percepts of efficacy have greatest impact on initial competitive performance, whereas socially induced self-percepts affect the subsequent course of competitive endurance (Weinberg, Gould, Yukelson, & Jackson, in press). The power of self-efficacy belief over brawn is underscored further by evidence that self-percepts of physical efficacy illusorily boosted in females and illusorily diminished in males oblit-

erates large preexisting sex differences in physical strength (Weinberg et al., 1979).

Collective Efficacy

The discussion thus far has focused mainly on the personal effects of perceived self-efficacy. People do not live their lives as social isolates. Many of the challenges and difficulties they face reflect group problems requiring sustained collective effort to produce any significant change. The strength of groups, organizations, and even nations lies partly in people's sense of collective efficacy that they can solve their problems and improve their lives through concerted effort. Perceived collective efficacy will influence what people choose to do as a group, how much effort they put into it, and their staying power when group efforts fail to produce results. It should be noted that knowledge of personal efficacy is not unrelated to perceived group efficacy. As will be shown shortly, collective efficacy is rooted in self-efficacy. Inveterate self-doubters are not easily forged into a collectively efficacious force.

COLLECTIVE EFFICACY AND SOCIAL CHANGE

The task of social change has never been an easy one. Those who seek to alter social systems and their practices encounter opposition from power holders and influential vested interests. Should challengers resort to forceful social protest, punitive sanctions can be brought to bear against them. The numerous obstacles and coercive threats deter attempts to alter social conditions that adversely affect human lives.

It is often said that hopelessness breeds militant social action. However, the evidence would seem to dispute this view. Consistent with self-efficacy theory, studies of social and political activism indicate that detrimental conditions prompt forceful action, not in those who have lost hope, but in the more able members whose efforts at social and economic betterment have met with at least some success (Bandura, 1973). Consequently, they have reason to believe that some changes can be brought about through forceful group action.

Among the members of dissident groups, those who protest social inequities, compared to nonparticipants, are generally better educated, have greater self-pride, have a stronger belief in their ability to influence events in their lives, and favor coercive measures, if necessary, to improve their living conditions (Caplan, 1970; Crawford & Naditch, 1970). In many nations university students, rather than the severely underprivileged segments of the society, are the spearhead of political activism (Lipset, 1966). They are the ones who often initiate the protest movements that eventually force social reforms and topple governments. Results of comparative studies indicate that people who are most disposed to social action generally come from familial backgrounds in which the exercise of social influence has been modeled and rewarded (Keniston, 1968; Rosenhan, 1970). Modeling influences, however, which serve as a major vehicle of social diffusion, can substantially alter the personal and social correlates of activism over time. Those who initiate collective action usually differ in characteristics from later adopters.

Research including efficacy probes speaks more directly to the issue of whether perceived efficacy serves as one mechanism through which social discontent gives rise to social activism. Much of this research relies on global indices of efficacy, often blending mixed contents (Balch, 1974). Even so, the relationships obtained are fairly consistent. The higher the perceived efficacy, the greater the propensity to social activism (Forward & Williams, 1970; Marsh, 1977; Muller, 1972, 1979). However, sharper empirical tests of theory will require particularized multifaceted measures of efficacy, tapping perceived capabilities for fashioning and executing different types of strategies designed to influence the course of social events. Since social outcomes are typically achieved in concert with others, perceptions of group as well as personal efficacy warrant examination.

UNDERMINERS OF COLLECTIVE EFFICACY

Rapidly changing conditions, which impair the quality of social life and degrade the physical environment, call for wide-reaching solutions to human problems and greater commitment to shared purposes. Such changes can be achieved only through the mutual effort of people who have the skills, the sense of collective efficacy, and the incentives to shape the direction of their future environment. As the need for efficacious group action grows, so does the sense of collective powerlessness.

One can point to a number of factors that serve to undermine the development of collective efficacy. Modern life is extensively regulated by complex physical technologies that most people neither comprehend nor believe they can do much to influence. Pervasive dependence on technologies that govern major aspects of life imposes dependence on specialized technicians. The social ma-

chinery of a society is no less challenging. Layers of bureaucratic structures thwart effective social action. Even the more efficacious individuals, who are not easily deterred, find their efforts blunted by mazy organizational mechanisms that diffuse and obscure responsibility. Rather than developing the means for shaping their future, most people grudgingly relinquish control to technical specialists and to public officials.

Effective action for social change requires merging diverse self-interests in support of common goals. Disagreements among different constituencies that have a personal stake in the matters of concern create additional obstacles to successful group action. Recent years have witnessed growing social fragmentation into narrow-interest constituencies. Pluralism is taking the form of militant factionalism. As a consequence it is easier to enlist diverse factions to block courses of action than to merge them into a unified force for social change.

In addition to the difficulties in enlisting shared purposes and collective effort in their service, the institutions that are the objects of change mount their own forceful countermeasures. Because of the many conflicting forces that come into play, attempts to produce socially significant changes do not bring quick successes. Long delays between action and noticeable results discourage many of the advocates along the way, even though changes of long-term significance may eventually occur. It is difficult to develop and sustain a sense of collective efficacy when the effects of group effort are not readily noticeable.

To complicate matters further, life in today's societies is increasingly affected by transnational interdependencies (Keohane & Nye, 1977). What happens in one part of the world can affect the welfare of vast populations elsewhere. There are no handy direct mechanisms by which people can exercise reciprocal influence on transnational systems that affect their daily lives. Profound global changes—burgeoning populations, shrinking resources, deteriorating environments—are creating new realities requiring transnational remedies.

The subject of collective efficacy calls for broad and comprehensive research effort. Advancement in this field of study requires development of suitable tools for gauging groups' perceptions of their efficacy to achieve varying levels of results. Greatest progress will be made in elucidating the development, decline, and restoration of collective efficacy and how it affects group functioning, if measures of perceived group efficacy are tied closely to explicit indices of group performance.

National surveys have been conducted periodically of people's general sense of political efficacy, their confidence in their social institutions, and how they view the competence of those they choose to lead them. Though such omnibus measures leave much to be desired, they do provide evidence of growing erosion of perceived efficacy of the citizenry and its social institutions to solve human problems (Guest, 1974; Lipset & Schneider, 1982).

FACTIONAL EFFICACY AND COLLECTIVE ENDEAVOR

In analyzing impediments to human endeavors, it is all too easy to lose sight of the fact that human influence, whether individual or collective, operates in reciprocal, rather than in unidirectional, ways (Bandura, 1978b; Cairns, 1979; Endler & Magnusson, 1976; Pervin & Lewis, 1978). Although the degree of reciprocality may vary from one domain of activity to another, social transactions are rarely unilateral. The amount of imbalance of social power partly depends on the extent to which people exercise the influence that is theirs to command. The less they bring their influence to bear on others, the more control they relinquish to them.

It is the internal barriers created by perceptions of collective inefficacy that are especially pernicious because they are more demoralizing and behaviorally self-debilitating than are external impediments. People who have a sense of collective efficacy will mobilize their efforts and resources to cope with external obstacles to the changes they seek. But those convinced of their inefficacy will cease trying even though changes are attainable through concerted effort.

The social system is not a monolith. Rather, it comprises numerous constituencies, each vying for power and lobbying for its own interests. In this continual interplay one and the same faction is transmuted from a challenger of the system to an influential confederate in the system opposing rival factions, depending on the issues at stake. Thus, for example, the tobacco constituency fights the system in federal efforts to curtail smoking, but it becomes the system fighting the efforts of others to curtail federal subsidies to tobacco growers. Whether people want government in or out of their lives depends on the particular interests being serviced.

The rise of narrow-interest groups flexing their factional efficacy does not jibe with the diagnoses of growing public apathy and feelings of helplessness. Clearly there exists a paradox to be explained. Viewed from the efficacy perspective, in the absence of shared imperatives, growing fac-

tional efficacy undermines the exercise of collective efficacy through mutual immobilization. Efficacious factional initiatives, often fragmented and rivalrous, create an overload of programs and regulations, force divisive issues on officeholders, weaken their capabilities to deal with them satisfactorily, and obfuscate a sense of purpose (Atkin, 1980; Barton, 1980; Fiorina, 1980). Thus people are exercising greater factional influence but achieving less collectively and becoming more discontented. Since changing officeholders does not eliminate the social problems people face, they become disillusioned about the prospect of effecting significant change in their social and economic way of life through the institutional means available to them.

Achievement of collective efficacy requires cogent means of relating factional interests to shared purposes. The unifying purposes must be explicit and attainable through concerted effort. Because success calls for sustained endeavor over a long time, proximal subgoals are needed to provide incentives and evidence of progress along the way. As a society we enjoy the benefits left by those before us, who collectively resisted inhumanities and worked for social reforms that permit a better life. Our own collective efficacy will shape, in turn, how future generations will live their lives. The times call for a commitment of collective effort, rather than litanies of powerlessness that instill in people beliefs of inefficacy to influence conditions that shape the course of their lives.

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