

Self-Regulation of Motivation Through Anticipatory and Self- Reactive Mechanisms

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Motivation is a general construct linked to a system of regulatory mechanisms that are commonly ascribed both directive and activating functions. At the generic level it encompasses the diverse classes of events that move one to action. Level of motivation is typically indexed in terms of choice of courses of action and intensity and persistence of effort. Attempts to explain the motivational sources of behavior therefore primarily aim at clarifying the determinants and intervening mechanisms that govern the selection, activation, and sustained direction of behavior toward certain goals.

Social cognitive theory distinguishes three broad classes of motivation (Bandura, 1986). One class of motivators is biologically based and includes biological conditions arising from cellular deficits and external aversive events that activate consummatory and protective behavior through physical discomfort. The early psycho-

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logical theorists conceptualized motivation largely in terms of the energizing and directive functions of physiological activators. However, the activating potential of physiological states is under substantial anticipatory and generative cognitive control. For example, infants become active when they expect to be fed rather than solely when they are hungry (Marquis, 1941). Humans can be sexually stirred by erotic fantasies more than by hormonal injections (Beach, 1969). Similarly, the activating and directive influence of external aversive stimulation can be markedly altered by the way the aversive events and resulting sensations are construed (Bandura, 1991a; Cioffi, 1991; McCaul & Malott, 1984). Thus, even in the so-called biological motivators, human behavior is extensively activated and regulated by anticipatory and generative cognitive mechanisms rather than simply impelled by biological urges.

The second class of motivators operates through social incentives. In the course of development, physically positive experiences often occur in conjunction with expressions of others' interest and approval, whereas unpleasant experiences are associated with disapproval or censure. Through such correlative experiences, social reactions themselves become predictors of primary rewarding and punishing consequences and thereby become incentives. People will do things to gain approval and refrain from activities that arouse others' displeasure or wrath. By reversing the physical correlates, one could make smiles forebode suffering and scowls forewarn pleasure. The effectiveness of social reactions as incentives thus derives from their predictive value rather than inhering in the reactions themselves. For this reason the approval and disapproval of people who have power to reward and punish operate as stronger incentives than similar expressions by individuals who cannot affect one's life. Indiscriminate praise that never carries any tangible effects becomes an empty reward, and disapproval that is never backed up with any tangible consequences becomes devoid of motivating power.

Several factors contribute to the durability of social incentives. The same expressions can predict an array of possible rewarding or punishing experiences. Disapproval, for example, may result in such unpleasant effects as physical punishment, loss of privileges, monetary penalties, dismissal from a job, or ostracism. An event that signifies diverse possible consequences will have greater po-

tency than one that portends only a single effect. Moreover, social reactions are not invariably accompanied by primary experiences: praise does not always bring material benefits, and reprimands do not always result in physical suffering. Unpredictability protects social and symbolic incentives from losing their effectiveness (Mowrer, 1960). Because of intermittency and diversity of correlates, social reactions retain their incentive function even with minimal primary support.

The third major source of motivators is cognitively based. In cognitively generated motivation, people motivate themselves and guide their actions anticipatorily by exercising forethought. They anticipate likely outcomes of prospective actions, they set goals for themselves, and they plan courses of action designed to realize valued futures. The capability for self motivation and purposive action is rooted in cognitive activity. Future events cannot be causes of current motivation or action, but by cognitive representation in the present, conceived future events are converted into current motivators and regulators of behavior. Forethought is translated into incentives and action through self-regulatory mechanisms. This chapter addresses cognitive motivators because most human behavior is activated and regulated over extended periods by anticipatory and self-reactive mechanisms.

One can distinguish three forms of cognitive motivators around which different theories have been built. These include *causal attributions*, *outcome expectancies*, and *cognized goals*. The corresponding theories are attribution theory, expectancy-value theory, and goal theory. Figure 1 summarizes schematically these alternative conceptions of cognitive motivation. We shall see later that certain basic mechanisms of personal agency, such as perceived self-efficacy, operate in all of these variant forms of motivation.

Attribution Theory

According to the attribution theory of motivation (Weiner, 1985), retrospective judgments of the causes of one's performance have motivational effects. People who credit their successes to personal capabilities and their failures to insufficient effort will undertake difficult tasks and persist in the face of failure, because they see their out-

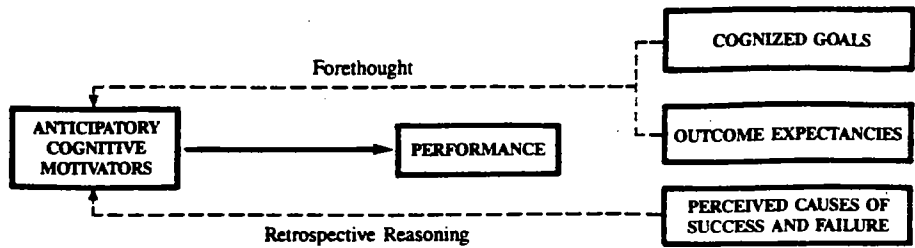


FIGURE 1. Schematic representation of conceptions of cognitive motivation based on cognized goals, outcome expectancies, and causal attributions.

comes as being influenced by how much effort they expend. In contrast, those who ascribe their failures to deficiencies in ability and their successes to situational factors will display low striving and give up readily when they encounter obstacles.

Some writers have argued that reasons offered retrospectively should not be regarded as causes. This is obviously true for past actions, which precede ascribed causes and would therefore involve backward causation. But reasons for past performances that affect beliefs about personal control can cause future actions. Thus people who believe they failed because they did not work hard enough are likely to strive harder, whereas those who believe they failed because they lack ability are apt to slacken their efforts and easily become discouraged. However, causal attributions can serve different purposes. For example, Covington and Omelich (1979) provide evidence that causal attributions may sometimes function as self-serving excuses that do not change performance rather than as motivators. The question of when causal attributions function as excuses and when they are motivators warrants investigation.

The role of attributional processes in human motivation is clarified by research in which causal attributions for ongoing performances are systematically varied by arbitrary attributional feedback and then changes in perceived self-efficacy and performance are measured. The results indicate that causal attributions can influence achievement strivings, but the effect is mediated almost entirely through changes in perceived self-efficacy (Relich, Debus, & Walker, 1986; Schunk & Gunn, 1986; Schunk & Rice, 1986).

Ability attributions are accompanied by strong self-beliefs of efficacy, which in turn predict subsequent performance. *Effort* attributions have variable effects on self-efficacy beliefs. These diverse find-

ings raise the issue of the concept of ability in attribution theory. Attribution theorists usually treat ability as a fixed or stable internal property. High effort needed to achieve an outcome is taken as indicating low ability (Kun, 1977). In actuality, people vary in their conceptions of ability and alter their views on the relation between effort and ability with increasing experience (M. Bandura & Dweck, 1988; Dweck & Elliot, 1983; Nicholls & Miller, 1984). The presumptions of attributional theory fit the subgroup of people who regard ability as a stable entity. However, many individuals construe ability as an acquirable skill that is developed through effort. The harder you try, the more capable you become. For them, errors reflect inexperience in the activity that effort rectifies, rather than basic inability. High effort that begets rising accomplishments can thus enhance self-beliefs of efficacy (Schunk & Cox, 1986).

In judging their efficacy from performance, people use much more varied sources of enactive efficacy information than the four causal factors (effort, ability, task difficulty, chance) routinely assessed in attributional research. In addition to perceptions of task difficulty and amount of effort expended, they consider whether they performed under favorable or unfavorable conditions, the amount of external aid they received, their physical and emotional state at the time, and the pattern of their successes and failures with continued engagement in the activity. Positive or negative biases in the self-monitoring, cognitive representation, and retrieval of past successes and failures also affect self-efficacy judgments (Bandura, 1986).

The effect of effort attributions on self-efficacy beliefs will vary with different conceptions of ability and different configurations of efficacy-relevant information. Given these complicating factors, it is not entirely surprising that effort attributions do not bear a uniform relationship to self-efficacy beliefs. Regardless of whether effort attributions correlate positively or negatively with perceived efficacy, however, the stronger the self-efficacy belief, the better the subsequent performance (Schunk & Cox, 1986; Schunk & Gunn, 1986; Schunk & Rice, 1986).

The overall evidence reveals that causal attributions, whether in the form of ability, effort, or task difficulty, generally have weak or no independent effect on achievement motivation. The types of factors singled out by attributional theory convey efficacy-relevant

information and influence performance attainments mainly by altering people's belief in their efficacy. Occasionally, ability attribution emerges as an independent contributor to achievement motivation, but such direct effects tend to be small and equivocal.

Subjective weighting of attributional factors and self-efficacy appraisal involves bidirectional, rather than unidirectional, causation. The relative weight given to information regarding adeptness, effort, task complexity, and situational circumstances will affect self-efficacy appraisal. Self-beliefs of efficacy, in turn, bias causal attributions. Thus, people who regard themselves as highly efficacious tend to ascribe their failures to insufficient effort, whereas those who regard themselves as inefficacious view their failures as stemming from low ability (Collins, 1982; Silver, Mitchell, & Gist, 1989). Self-efficacy belief influences causal attributions for outcomes in social transactions as well as in cognitive activities (Alden, 1986).

Expectancy-Value Theory

People also motivate themselves and guide their actions anticipatorily by the outcomes they expect to flow from given courses of behavior. Expectancy-value theory was designed to account for this form of incentive motivation (Ajzen & Fishbein, 1980; Atkinson, 1964; Rotter, 1982; Vroom, 1964). These various formulations all assume that strength of motivation is governed jointly by the expectation that particular actions will produce specified outcomes and by the value placed on those outcomes. They differ mainly in what additional determinants are combined with expectancy and outcome value. Atkinson adds an achievement motive; Rotter adds a generalized expectancy that actions control outcomes; Ajzen and Fishbein add perceived social pressures to perform the behavior and proneness to compliance; Vroom adds belief that the behavior is achievable through effort.

In its basic version, the expectancy-value theory predicts that the higher the expectancy that certain behavior can secure specific outcomes and the more highly those outcomes are valued, the greater is the motivation to perform the activity. The findings generally show that outcome expectations obtained by adding or multi-

plying these cognitive factors predict performance motivation (Feather, 1982; Mitchell, 1974; Schwab, Olian-Gottlieb, & Heneman, 1979). The amount of variance in performance motivation explained by this model is generally smaller than might be expected, however. This has stimulated spirited debates about the scope of the expectancy-value theory, its major assumptions, and the methods used for assessing and combining the cognitive factors.

According to maximizing expectancy models, people seek to optimize their outcomes. Questions have been raised, however, concerning the assumptions about how decisions are usually made. As several authors have correctly observed, people are not as systematic in considering alternative courses of action and in weighing their likely consequences as expectancy-value models assume (Behling & Starke, 1973; Simon, 1976). Alternatives are often ill defined. People rarely examine all the feasible alternatives or give detailed thought to all the consequences of even the options they do consider. More typically they pick, from a limited array of possibilities, the course of action that looks satisfactory rather than searching studiously for the optimal one. Moreover, they are sometimes inconsistent in how they order alternatives, they have difficulty assigning relative weights to different types of outcomes, they let the attractiveness of the outcomes color their judgments of how difficult it might be to attain them, and they opt for lesser outcomes because they can get them sooner. When faced with many alternatives and complexly contingent outcomes, they use simplifying decision strategies that may lead them to select alternatives that differ from those they would have chosen had they weighted and ordered the various factors as presupposed by the maximizing model.

The issue in question is not the rationality of the judgmental process. People often have incomplete or erroneous information about alternatives and their probable consequences, they process information through cognitive biases, and what they value may be rather odd. Decisions that seem subjectively rational to the performer, given the basis on which they were made, may appear irrational to others. Subjective rationality often sponsors faulty choices. There are too many aspects to a judgmental process where one can go astray to permit objective rationality (Brandt, 1979). The main issue in dispute concerns the correspondence between the postulated

judgmental process and how people actually go about appraising and weighting the probable consequences of alternative courses of action.

The types of anticipated incentives singled out for attention is another dimension on which expectancy-value theory often departs from actuality. Some of the most valued rewards of activities are in the self-satisfaction derived from fulfilling personal standards. The satisfaction yielded by personal accomplishments may be valued more highly than tangible payoffs. When these two sources of incentives conflict, self-evaluative outcomes often override the influence of tangible rewards (Bandura, 1986). Because incentive theories of motivation tend to neglect affective self-evaluative outcomes, self-incentives rarely receive the consideration they deserve in the option/outcome calculus. Predictiveness is sacrificed if influential self-incentives are overlooked. With regard to the scope of the expectancy-value model, even the elaborated versions include only a few cognitive motivators. In actuality, forethought about outcomes influences effort and performance through additional intervening mechanisms.

People act on their beliefs about what they can do as well as on their beliefs about the likely effects of various actions. The motivating potential of outcome expectancies is partly governed by people's beliefs about their capabilities. There are many activities that, if done well, guarantee valued outcomes, but they are not pursued by those who doubt they can do what it takes to succeed (Beck & Lund, 1981; Betz & Hackett, 1986; Dzewaltowski, Noble, & Shaw, 1990; Wheeler, 1983). Self-perceived inefficacy can thus nullify the motivating potential of alluring outcome expectations. Conversely, a strong sense of personal efficacy can sustain efforts over extended periods in the face of uncertain or repeatedly negative outcomes. Indeed, because ordinary social realities are strewn with impediments, failures, adversities, setbacks, frustrations, and inequities, it requires a resilient sense of personal efficacy to sustain the perseverant effort needed to succeed (Bandura, 1989).

In activities that call upon competencies, self-efficacy beliefs affect the extent to which people act on their outcome expectations. Some expectancy-value theories include an expectancy that effort will beget the requisite performance (Vroom, 1964). It should be noted, however, that perceived self-efficacy encompasses much

more than beliefs about how effort determines performance. Effort is only one of many factors that govern the level and quality of performance. People judge their capability for challenging activities more in terms of their perceptions of the knowledge, skills, and strategies they have at their command than solely on how much they can exert themselves. Performances that call for ingenuity, resourcefulness, and adaptability depend more on adroit use of skills, specialized knowledge, and analytic strategies than on sheer effort (Wood & Bandura, 1989a). Moreover, people who cope poorly with stressors expect that marred performances in intimidating situations will be determined by their self-debilitating thought patterns rather than by how much effort they mount. The harder they try, the more they may impair their execution of the activity. Expectancy theorists probably singled out effort as the sole cause of performance because the theory has usually been concerned with how hard people work at routine activities unimpeded by obstacles or threats. Hence, the aspect of self-efficacy that is most germane to how much is accomplished is people's perceived perseverant capabilities—that is, their belief that they can exert themselves sufficiently to attain designated levels of productivity.

Some confusion has been introduced into the expectancy literature by misconstruing the specifying criteria of a performance level as its outcomes. A *performance* is conventionally defined as "an accomplishment" or "something done"; an *outcome*, as "something that follows as a result or consequence of an activity." Three major classes of outcomes can be distinguished—material consequences, social reactions, and self-reactions. Thus, in a high-jump field event performance levels are defined in terms of height of jumps. A six-foot leap is the realization of a particular performance, not the outcome that flows from it. The outcomes are the results a six-foot leap produces—the social recognition, applause, trophies, monetary prizes, and self-satisfaction if it represents a superior attainment, or the social disappointment, forfeiture of material rewards, and self-criticism if it represents a deficient level of attainment. Similarly, in assessments of academic performance, letter grades of *A*, *B*, *C*, *D*, *F* are the specifying criteria of performance level, not the outcomes. Remove the letter indicants of performance level, and one is left with an indefinite or indescribable performance. The social reactions, personal benefits, costs, and affective self-reactions anti-

pated for an A-level performance, or for an F-level performance, constitute the outcome expectations. To conceptualize a performance level as the outcome of itself is to destroy the conventional meanings of performance and outcome.

The degree to which outcome expectations contribute independently to performance motivation varies depending on how tightly contingencies between actions and outcomes are structured, either inherently or socially, in a given domain of functioning. Because activities vary in their structural contingencies, there is no single relationship between judgments of self-efficacy and outcome expectations. For many activities, outcomes are determined by level of competence. Hence the types of outcomes people anticipate depend largely on how well they believe they can perform in given situations. Students do not expect to be showered with academic honors or prizes regardless of the adequacy of their scholarship. In most social, intellectual, and physical pursuits, those who judge themselves highly efficacious will expect favorable outcomes, whereas those who expect poor performances of themselves will conjure up negative outcomes. Thus, in activities in which outcomes are highly contingent on quality of performance, self-judged efficacy accounts for most of the variance in expected outcomes. When variations in perceived self-efficacy are partialled out, the outcomes expected for given performances do not have much of an independent effect on behavior (Barling & Abel, 1983; Barling & Beattie, 1983; Godding & Glasgow, 1985; Lee, 1984a, 1984b; Williams & Watson, 1985).

Self-efficacy beliefs account for only part of the variance in expected outcomes when outcomes are not completely controlled by quality of performance. This occurs when extraneous factors also affect outcomes, or when outcomes are socially tied to a minimum level of performance so that some variations in quality above or below the standard do not produce differential outcomes. In work situations, for example, compensation is fixed to some normative performance standard, but a higher level of productivity does not bring larger weekly paychecks. Perceived self-efficacy to fulfill the minimal standard will produce better expected outcomes than perceived self-inefficacy to reach that level. But variations in perceived self-efficacy above the minimal standard would not give rise to different expected outcomes. And finally, expected outcomes are indepen-

dent of perceived self-efficacy when contingencies are restrictively structured so that no level of competence by certain groups can produce desired outcomes. This occurs in pursuits that are rigidly segregated by sex, race, age, or some other factor. In such circumstances, people in the disfavored group expect poor outcomes however efficacious they judge themselves to be. Thus, for example, when athletes were rigidly segregated by race, black baseball players could not gain entry to the major leagues and the attendant benefits no matter how well they pitched or batted.

Recent efforts to increase the predictiveness of expectancy-value models have added an efficacylike factor to the usual set of predictors (Ajzen, 1985). In the Ajzen and Fishbein (1980) model of reasoned action, the intention to engage in a course of action is governed by a personal determinant in the form of perceived outcomes and their valuation as well as a subjective normative determinant comprising perceived social pressures by significant others and one's motivation to comply with their expectations. Ajzen and his colleagues have shown that perceived control makes a significant independent contribution to performance within the expanded model, both directly and indirectly through its effects on intention (Ajzen & Madden, 1986; Schifter & Ajzen, 1985). Indeed, in activities that are not subject to much social pressure, perceived self-efficacy carries most of the explanatory power (Dzewaltowski, et al. 1990). The predictiveness of other versions of expectancy-value theory is enhanced by including the self-efficacy determinant (de Vries, Dijkstra, & Kuhlman, 1988; McCaul, O'Neill, & Glasgow, 1988; Schwarzer, 1990; Wheeler, 1983).

There has been some dispute between goal theorists and expectancy-value theorists on the causal ordering of motivational determinants. Expectancy theorists contend that high goals enhance motivation because they have greater incentive value (Matsui, Okada & Mizuguchi, 1981). Goal theorists contend that expectancy-value factors exert their impact on motivation by their effects on personal goal setting. Studies testing these competing conceptions reveal that perceived capability and level of personal goals predict performance motivation (Mento, Cartledge, & Locke, 1980). Success expectancy and outcome valuation enhance performance indirectly by promoting goal adoption, rather than by operating directly on perfor-

mance. When success expectancy also affects performance directly, its independent contribution is small compared with personal goals (Garland, 1984).

Goal Theory

The capacity to exercise self-influence by personal challenge and evaluative reaction to one's own attainments provides a major cognitive mechanism of motivation and self-directedness. Motivation through pursuit of challenging standards has been the subject of extensive research on goal setting. Evidence from numerous laboratory and field studies involving heterogeneous task domains shows that enhancement of motivation by explicit challenging goals is a remarkably robust effect replicated across heterogeneous activity domains, settings, populations, social levels, and time spans (Locke & Latham, 1990; Mento, Steel, & Karren, 1987). Goals operate largely through self-referent processes rather than regulating motivation and action directly. The self-reactive influences by which personal standards create powerful motivational effects are analyzed in some detail in the sections that follow.

SELF-REACTIVE INFLUENCES AS MEDIATORS OF GOAL MOTIVATION

Motivation based on standards involves cognitive comparison. By making self-satisfaction conditional on matching adopted goals, people give direction to their actions and create self incentives to persist in their efforts until their performances match their goals. The anticipated self-satisfaction gained from fulfilling valued standards provides one source of incentive motivation for personal accomplishments. Perceived negative discrepancies between performance and the standard individuals seek to attain creates dissatisfaction that serves as another incentive motivator for enhanced effort. The motivational effects do not stem from the goals themselves, but rather spring from the fact that people respond evaluatively to their own behavior. Goals specify the conditional requirements for positive self-evaluation.

Activation of self-evaluation processes through internal comparison requires both comparative factors—a personal standard and knowledge of one's performance level. Neither performance knowledge without standards nor standards without performance knowledge can provide a basis for self-evaluative reactions. Studies in which goals and performance feedback are systematically varied yield results consistent with this formulation, whatever the nature of the pursuit (Bandura & Cervone, 1983; Becker, 1978; Strang, Lawrence, & Fowler, 1978). Simply adopting a goal, whether an easy or a challenging one, without knowing how one is doing, or knowing how one is doing in the absence of a goal, has no lasting motivational impact. In marked contrast, the combined influence of goals with performance feedback heightens motivation substantially. This is shown in Figure 2, which summarizes the level of self motivation in the presence of both, only one, or none of the comparative factors.

Although performance feedback alone is not a dependable motivator, it produces substantial variance in motivation that is explainable by the comparative structures individuals create for themselves. When they engage in an ongoing activity and are informed of their attainments, some set goals for themselves spontaneously (Bandura, & Cervone, 1983). Variations in personal goal setting are reflected in diversity in motivation (Figure 3). Those who set no goals for themselves achieve no change in effort and are surpassed by those who aim to match their previous level of effort, and they in turn are outperformed by those who set themselves the more challenging goal of bettering their past endeavor. However, self-set goals alone do not in themselves have any continuing motivational impact on activities that provide little inherent feedback of performance level. These results from self-created comparative structures lend further support for the influential role of cognitive comparison in motivation through personal standards or goals.

Cognitive motivation based on goal intentions is mediated by three types of self-influences: they include affective self-evaluation, perceived self-efficacy for goal attainment, and ongoing adjustment of personal standards. As I have already pointed out, goals motivate by enlisting self-evaluative involvement in the activity. People seek self-satisfaction from fulfilling valued standards and are prompted to intensify their efforts by discontent with substandard perfor-

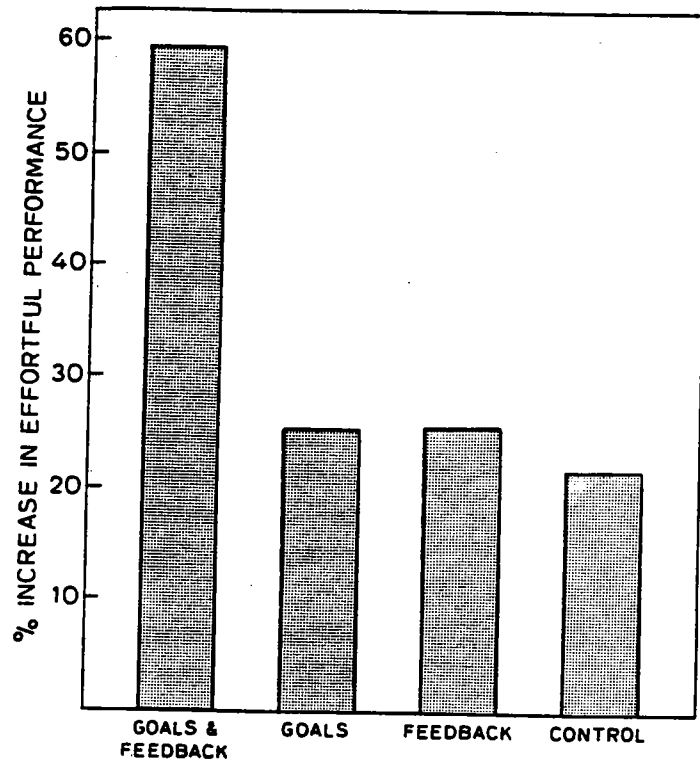


FIGURE 2. Mean percentage change in level of motivation under conditions combining goals with performance feedback, goals alone, feedback alone, or none of these factors. From Bandura, & Cervone, 1983, p. 1021. Copyright 1983 by the American Psychological Association. Reprinted by permission of the publisher.

mance. Both the positive and negative affective self-motivators operate in human pursuits, although discontent is more salient when performances fall short of what one seeks. But without the prospect of self-satisfaction from personal accomplishments, unremitting discontent would eventually take its toll on self motivation.

Perceived self-efficacy is another cognitive factor that plays an influential role in the exercise of personal control over motivation. It is partly based on their self-belief of efficacy that people choose what challenges to undertake, how much effort to expend in the endeavor, how long to persevere in the face of difficulties, and how much stress and despondency they experience in the face of difficulties and failures (Bandura, 1986, 1989). Whether negative discrepancies between personal standards and attainments are motivating or discouraging is partly determined by people's belief that they can

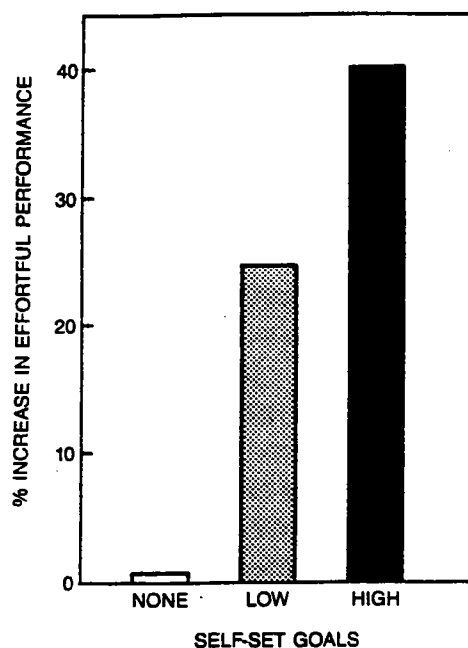


FIGURE 3. Mean increases in motivational level under conditions of performance feedback alone depending on whether people continue to perform the activity without goals or spontaneously set low or high goals for themselves. Drawn from data in Bandura & Cervone, 1983.

attain the goals they set for themselves. Those who harbor self-doubt about their capabilities are easily dissuaded by failure. Those who are assured of their capabilities intensify their efforts when they fail to achieve what they seek, and they persist until they succeed.

That strong belief in one's efficacy heightens level of effort and perseverance in difficult pursuits is corroborated by evidence across diverse domains of functioning for both children and adults (Bandura, & Cervone, 1986; Brown & Inouye, 1978; Cervone, & Peake, 1986; Jacobs, Prentice-Dunn & Rogers, 1984; Schunk, 1984; Weinberg, Gould, & Jackson, 1979). Several paradigms have been used to verify that self-efficacy beliefs operate as causal factors in motivation. Some of these tests of causality introduce a trivial factor that is devoid of information to affect competency but can alter perceived self-efficacy. The impact of the altered self-efficacy beliefs on level of motivation is then measured. For example, studies of anchoring influences show that arbitrary reference points from which judgments

are adjusted either upward or downward can bias the judgments because the adjustments are usually insufficient. Cervone and Peake (1986) used arbitrary anchor values to influence self-efficacy judgments. Judgments made from an arbitrary high starting point biased students' perceived self-efficacy as problem solvers in the positive direction, whereas an arbitrary low starting point lowered students' judgments of their efficacy (Figure 4). The higher the instated perceived self-efficacy, the longer they persevered on difficult and unsolvable problems before they quit.

In a related study (Peake & Cervone, 1989), efficacy judgment was biased simply by having people judge their self-efficacy in relation to ascending or descending levels of possible attainment. The initial levels in these respective sequences served as anchoring influences that lowered or raised self-efficacy beliefs. Elevated self-beliefs of efficacy heightened effort, whereas lowered self-beliefs lessened effort on troublesome problems. In a further study, Cervone (1989) biased self-efficacy judgment through differential cognitive focus on things about the task that might make it troublesome or tractable. Dwelling on formidable aspects weakened people's belief in their efficacy, but focusing on doable aspects raised self-judgment of capabilities. The higher the altered self-efficacy beliefs, the longer people persevered in the face of repeated failure. In these various experiments, perceived self-efficacy predicts variance in motivation within treatment conditions as well as across treatments. Mediation analyses reveal that neither anchoring influence nor cognitive focus has any impact on motivation when variations in self-efficacy beliefs are controlled. These external influences thus exerted their effect on motivation entirely by mediating changes in self-efficacy beliefs.

A number of studies have been conducted in which self-efficacy beliefs are altered by bogus feedback unrelated to one's actual performance. People partly judge their capabilities through social comparison. Using this type of induction procedure, Weinberg, Gould, and Jackson (1979) showed that physical stamina in competitive situations is mediated by perceived self-efficacy. They raised the self-efficacy beliefs of one group by telling subjects they had triumphed in a competition of muscular strength. They lowered the self-efficacy beliefs of another group by telling subjects they had been outperformed by their competitors. The higher the illusory beliefs of phys-

Self-Regulation of Motivation

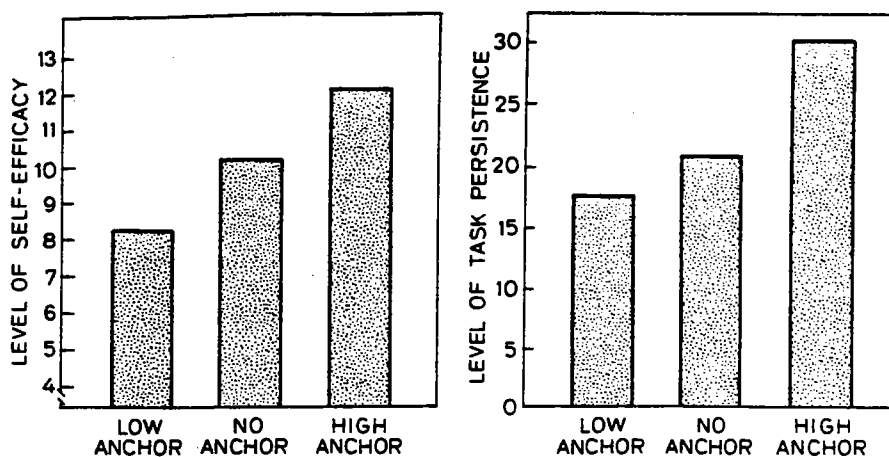


FIGURE 4. Mean changes induced in perceived self-efficacy by anchoring influences and the corresponding effects on level of subsequent perseverant effort. From Cervone & Peake, 1986, p. 495. Copyright 1986 by the American Psychological Association. Reprinted by permission.

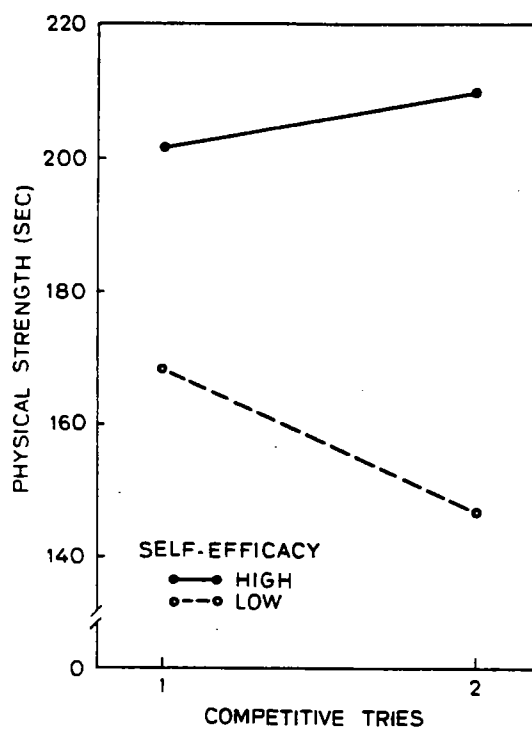


FIGURE 5. Mean level of physical stamina mobilized in competitive situations as a function of illusorily instated high or low self-percepts of physical efficacy. Drawn from data in Weinberg, Gould, & Jackson, 1979.

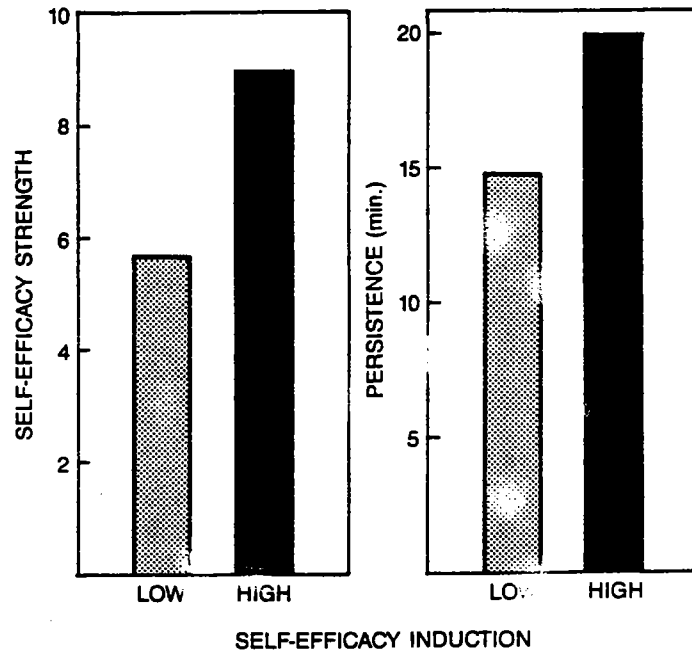


FIGURE 6. Mean changes in perceived self-efficacy induced by arbitrary normative comparison and the corresponding effects on level of subsequent perseverant effort. Drawn from data in Jacobs, Prentice-Dunn, & Rogers, 1984.

ical strength, the more physical endurance subjects displayed during competition on a new task measuring physical stamina (Figure 5). Failure in the subsequent competition spurred those with a high sense of perceived self-efficacy to even greater physical effort, whereas failure impaired the performance of those whose perceived self-efficacy had been undermined. Self-beliefs of physical efficacy illusorily heightened in females and illusorily weakened in males obliterated large preexisting sex differences in physical strength.

Jacobs et al. (1984) used another variant of social self-appraisal—bogus normative comparison—as a way of altering self-efficacy beliefs. Individuals are led to believe, regardless of their actual performance, that they performed at high or low percentile ranks of an ostensibly normative group. Self-efficacy beliefs heightened by this means produce stronger perseverant effort (Figure 6). The regulatory role of self-efficacy beliefs, instated by arbitrary normative comparison, is replicated in perseverance in markedly different domains of functioning (Litt, 1988).

The combined evidence that divergent modes of efficacy induc-

tion produce convergent effects on motivation across a variety of pursuits adds to the explanatory and predictive generality of the efficacy mediator. Perceived self-efficacy determines not only level of effort expenditure, but how productively that effort is deployed. People who have a strong sense of efficacy engage in more efficient analytic thinking than do self-doubters (Wood & Bandura, 1989a). When faced with complex decisions, those who distrust their efficacy become erratic in their analytic thinking. Perceived self-efficacy can thus enhance performance through its effects on thought processes and deployment of strategies as well as on motivation. Moreover, in activities in which deficient performances can have untoward consequences, perceived self-inefficacy can impair functioning by generating disruptive cognitions and avoidant actions. The efficacy-activated cognitive and affective processes will be addressed later.

The goals people set for themselves at the outset of an endeavor are likely to change, depending on how they construe the pattern and level of progress they are making and readjust their aspirations accordingly (Campion & Lord, 1982). They may maintain their original goal, lower their sights, or adopt an even more challenging goal. Thus the third constituent self-influence in the ongoing regulation of motivation concerns readjusting personal goals in light of one's attainments. Csikszentmihalyi (1979) examined what it is about activities that fosters continuing deep engrossment in life pursuits. The common factors found to be conducive to enduring motivation include adopting personal challenges in accordance with one's perceived capabilities and having informative feedback on progress.

Studies in which discrepancy levels are varied systematically and the self-reactive influences are measured before motivational change shed light on how these influences operate in concert in regulating motivation through goal systems. One experiment examined how self-evaluative and efficacy mediators contribute to motivation under a moderate negative goal discrepancy (Bandura, & Cervone, 1983). As shown in Figure 7, affective self-evaluation and perceived self-efficacy are good predictors of the degree of change in motivation when attainments fall short of the goal being pursued. Discontent over a substandard performance combined with high perceived self-efficacy for goal attainment produces a marked heightening of effort. A low sense of self-efficacy with low discon-

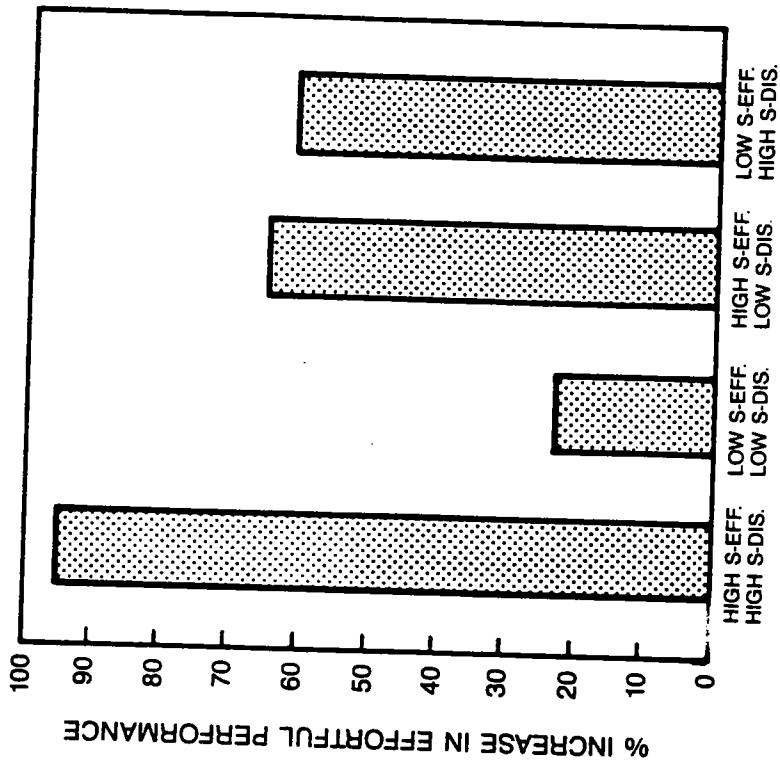


FIGURE 7. Mean percentage changes in motivational level under conditions combining goals and performance feedback as a function of different combinations of levels of self-dissatisfaction (S-DIS) and perceived self-efficacy for goal attainment (S-EFF). The left-hand panel shows the mean change in motivation for the entire session; the right-hand panel shows the mean motivational change between the initial and the final segment of the session. From Bandura & Cervone, 1983, p. 1024. Copyright 1983 by the American Psychological Association. Adapted by permission of the publisher.

