Social Cognitive Theory of Organizational Management

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This article analyzes organizational functioning from the perspective of social cognitive theory, which explains psychosocial functioning in terms of triadic reciprocal causation. In this causal structure, behavior, cognitive, and other personal factors and environmental events operate as interacting determinants that influence each other bidirectionally. The application of the theory is illustrated in a series of experiments of complex managerial decision making, using a simulated organization. The interactional causal structure is tested in conjunction with experimentally varied organizational properties and belief systems that can enhance or undermine the operation of the self-regulatory determinants. Induced beliefs about the controllability of organizations and the conception of managerial ability strongly affect both managers' self-regulatory processes and their organizational attainments. Organizational complexity and assigned performance standards also serve as contributing influences. Path analyses reveal that perceived managerial self-efficacy influences managers' organizational attainments both directly and through its effects on their goal setting and analytic thinking. Personal goals, in turn, enhance organizational attainments directly and via the mediation of analytic strategies. As managers begin to form a self-schema of their efficacy through further experience, the performance system is regulated more strongly and intricately through their self-conceptions of managerial efficacy. Although the relative strength of the constituent influences changes with increasing experience, these influences operate together as a triadic reciprocal control system.

Many theories have been proposed over the years to explain human psychosocial functioning. They differ in the conceptions of human nature they adopt and in what they regard as the basic determinants and mechanisms of human motivation and action. Human behavior often has been explained in terms of one-sided determinism. In such models of unidirectional causation, behavior is depicted as being shaped and controlled either by environmental influences or by internal dispositions. Social cognitive theory explains psychosocial functioning in terms of tri-
adic reciprocal causation (Bandura, 1986). In this model of reciprocal determinism, behavior, cognitive, and other personal factors and environmental events operate as interacting determinants that influence each other bidirectionally (see Figure 1). Reciprocity does not mean that the different sources of influences are of equal strength. Nor do the reciprocal influences occur simultaneously. It takes time for a causal factor to exert its influence and to activate reciprocal influences. Because of the bidirectionality of influence, people are both products and producers of their environment.

This article focuses on how personal factors contribute to this dynamic transaction in the management of organizations. In the analysis of the personal determinants in this interactional causal structure, social cognitive theory accords a central role to cognitive, vicarious, self-regulatory, and self-reflective processes. Three aspects of social cognitive theory are especially relevant to the organizational field (Bandura, 1988d): the development of people’s cognitive, social, and behavioral competencies through mastery modeling, the cultivation of people’s beliefs in their capabilities so that they will use their talents effectively, and the enhancement of people’s motivation through goal systems.

**Development of Competencies Through Mastery Modeling**

Psychological theories traditionally have emphasized learning through the effects of one’s actions. If knowledge and skills could be acquired only through direct experience, the process of human development would be greatly retarded, not to mention exceedingly tedious, costly, and hazardous. Fortunately, people can expand their knowledge and skills on the basis of information conveyed by modeling influences. Indeed, virtually all learning phenomena resulting from direct experience can occur vicariously by observing people’s behavior and the consequences of it (Bandura, 1986; Rosenthal & Zimmerman, 1978).

**Mechanisms Governing Modeling**

Observational learning is governed by four component processes. **Attentional processes** determine what people selectively observe in the profusion of modeling influences and what information they extract from ongoing modeled activities. People cannot be much influenced by observed accomplishments if they do not remember them. A second major subfunction governing observational learning concerns cognitive representation processes. Retention involves an active process of transforming and restructuring information about events in the form of rules and conceptions. Retention is greatly aided when people symbolically transform the modeled information into memory codes and mentally rehearse the coded information.

In the third subfunction in modeling—**behavioral production processes**—symbolic conceptions are translated into appropriate courses of action. This is achieved through a conception-matching process, in which people’s centrally guided patterns of behavior are enacted and the adequacy of their actions is compared against their conceptual model (Carroll & Bandura, 1987). Individuals then modify their
behavior on the basis of the comparative information in order to achieve close correspondence between their conceptions and their action. The richer the repertoire of subskills that people possess, the easier it is to integrate these skills in the production of new behavior patterns.

The fourth subfunction in modeling concerns motivational processes. Social cognitive theory distinguishes between acquisition and performance because people do not do everything they learn. Performance of observationally learned behavior is influenced by three major types of incentive motivators—direct, vicarious, and self-produced. People are most likely to adopt modeled strategies if the strategies produce valued outcomes, rather than unrewarding or punishing effects. The observed cost and benefits that are accrued to others influence observers’ adoption of modeled patterns in much the same way as do directly experienced consequences. People are motivated by the successes of others who are similar to themselves, but they are discouraged from pursuing behaviors that they have seen often result in adverse consequences. Personal standards of conduct provide a further source of motivation. The self-evaluations people generate about their own behavior regulate which observationally learned activities they are most likely to pursue. They express what they find self-satisfying and reject what they disapprove of.

Modeling is not merely a process of behavioral mimicry. People may adopt functional patterns of behavior, which constitute proven skills and established customs, in essentially the same form as they are exemplified. However, for many activities, subskills must be improvised to suit changing circumstances. Modeling influences also convey rules for generative and innovative behavior. In this form of abstract modeling, observers extract the rules governing the specific judgments or actions exhibited by others. Once they learn the rules, they can use them to judge events and to generate courses of action that go beyond what they have seen or heard. Much human learning is aimed at developing cognitive skills on how to acquire and use knowledge for different purposes. Observational learning of thinking skills is greatly facilitated if models verbalize their thought processes in conjunction with their action strategies (Bandura, 1986; Meichenbaum, 1984).

**Guided Mastery Modeling**

Mastery modeling has been widely used with good results to develop intellectual, social, and behavioral competencies (Bandura, 1986, 1988d). The method that produces the best results includes three major elements. First, the appropriate skills are modeled to convey the basic competencies. Effective modeling teaches people general rules and strategies for dealing with different situations, rather than specific responses. People need to learn how the rules can be widely applied and adjusted to fit changing conditions. Modeling influences must be designed to build self-assurance in one’s capabilities as well as to convey skills. The impact that modeling has on beliefs about one’s capabilities is greatly increased by one’s perceived similarity to the models.

The second aspect involves guided skill mastery. After individuals understand the new skills, they need guidance and opportunities to perfect them. Initially, they test their newly acquired skills in simulated situations in which they need not fear making mistakes or appearing inadequate. This is best achieved by role-playing, in which they practice handling the types of situations they must manage in their work environment and they receive instructive feedback. The feedback that is most informative and helps to achieve the greatest improvements is based on corrective modeling.

Modeling and guided performance under simulated conditions are well suited for creating competencies, but it is unlikely that the new skills will be used for long, unless they prove useful when they are put into practice in work.

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situations. The third aspect of mastery modeling is a transfer program aimed at providing self-directed success. People must experience sufficient success when using what they have learned in order to believe both in themselves and the value of the new ways. This is best achieved by a transfer program, in which newly acquired skills are first tried on the job in situations that are likely to produce good results. As individuals gain skill and confidence in handling easier situations, they gradually take on more difficult problems. If they do not gain sufficient success to convince themselves of their new effectiveness, they will apply the new skills weakly and inconsistently, and they will rapidly abandon their newly acquired skills when they either fail to get quick results or experience difficulties.

Mastery modeling programs have been successfully applied to help supervisors develop competencies. Mastery modeling produces lasting improvements in supervisors' skills (Latham & Saari, 1979). Simply explaining to supervisors the rules and giving them strategies on how to handle problems on the job without using modeling and guided practice does not improve their supervisory competencies. To enhance competencies, people need instructive modeling, guided practice with corrective feedback, and help in transferring new skills to everyday situations. Porras and his colleagues have shown that mastery modeling affects the morale and productivity of organizations as well as supervisors' skills (Porras et al., 1982). Supervisors who had the benefit of the modeling program improved and maintained their supervisory problem-solving skills, as rated by their employees. The plant in which the modeling program was applied had a lower absentee rate, lower turnover of employees, and a higher level of productivity in follow-up assessments.

**Self-Efficacy Regulatory Mechanism**

In social cognitive theory (Bandura, 1986, 1988a), self-regulation of motivation and performance attainments is governed by several self-regulatory mechanisms that operate together. One of the mechanisms that occupies a central role in this regulatory process works through people's beliefs in their personal efficacy. Perceived self-efficacy concerns people's beliefs in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives. There is a difference between possessing skills and being able to use them well and consistently under difficult circumstances. To be successful, one not only must possess the required skills, but also a resilient self-belief in one's capabilities to exercise control over events to accomplish desired goals. People with the same skills may, therefore, perform poorly, adequately, or extraordinarily, depending on whether their self-beliefs of efficacy enhance or impair their motivation and problem-solving efforts.

**Sources of Self-Efficacy Beliefs**

People's beliefs about their efficacy can be instilled and strengthened in four principal ways. The most effective way individuals develop a strong sense of efficacy is through mastery experiences. Performance successes strengthen self-beliefs of capability. Failures create self-doubts. However, if people experience only easy successes, they come to expect quick results and are easily discouraged by failure. To gain a resilient sense of efficacy, people must have experience in overcoming obstacles through perseverant effort. Some setbacks and difficulties in human pursuits serve a useful purpose in teaching that success usually requires sustained effort. After people become assured of their capabilities through repeated successes, they can manage setbacks and failures without being adversely affected by them.

The second way to strengthen self-beliefs is through modeling. Proficient models build self-beliefs of capability by conveying to observers effective strategies for managing different situations. Modeling also affects self-efficacy beliefs
through a social comparison process. People partly judge their capabilities in comparison with others. Seeing similar others succeed by sustained effort raises observers’ beliefs about their own capabilities, whereas observing similar others fail despite high effort lowers observers’ judgments of their own capabilities and undermines their efforts.

Social persuasion is a third way of increasing people’s beliefs that they possess the capabilities to achieve what they seek. If people receive realistic encouragements, they will be more likely to exert greater effort and to become successful than if they are troubled by self-doubts. However, if their beliefs of personal efficacy are raised to unrealistic levels, they run the risk of failures that undermine their perceptions of personal efficacy. Successful motivators and efficacy builders do more than convey positive appraisals. In addition to raising people’s beliefs in their capabilities, they assign tasks to them in ways that bring success and avoid placing them prematurely in situations in which they are likely to fail. To ensure progress in personal development, success should be measured in terms of self-improvement, rather than through triumphs over others.

People also rely partly on judgments of their physiological states when they assess their capabilities. They read their emotional arousal and tension as signs of vulnerability to poor performance. In activities involving strength and stamina, people judge their fatigue, aches, and pains as signs of physical incapability. The fourth way of modifying self-beliefs of efficacy is for people to enhance their physical status, to reduce their stress levels, or to alter their dysfunctional construals of somatic information.

**Diverse Effects of Self-Efficacy Beliefs**

People’s beliefs in their efficacy can affect their psychological well-being and performance through several intervening processes (Bandura, in press-a). People can exert some influence over their lives through the environments they select and the environments they create. One’s judgments of personal efficacy affect one’s choice of activities and environments. People tend to avoid activities and situations they believe will exceed their coping capabilities, but they readily undertake challenging activities and pick social environments they judge themselves capable of managing. The social influences in the selected environments can set the direction of personal development through the competencies, values, and interests these influences promote. This process is well illustrated in research on the impact that perceived self-efficacy has on choice of career paths. The stronger the people’s self-beliefs of efficacy, the more career options they consider to be possible and the better they prepare themselves educationally for different occupational pursuits (Betz & Hackett, 1986; Lent & Hackett, 1987; Miura, 1987). People often restrict their career options because they believe they lack the necessary capabilities, although they have the actual ability. This self-limitation arises more from self-doubts, rather than from inability. Women are especially prone to limit their interests and range of career options through the self-beliefs that they lack the necessary capabilities for occupations that are traditionally dominated by men, even when they do not differ from men in actual ability.

People’s self-beliefs of efficacy also determine their level of motivation, which is reflected in how much effort they will exert and how long they will persevere. The stronger the belief in their capabilities, the greater and more persistent are their efforts (Bandura, 1988a). When faced with difficulties, people who have self-doubts about their capabilities slacken their efforts or abort their attempts prematurely and quickly settle for mediocre solutions. Those who have a strong belief in their capabilities exert greater effort to master the challenge (Bandura & Cervone, 1983, 1986; Cervone & Peake, 1986; Jacobs, Prentice-Dunn, & Rogers, 1984; Weinberg, Gould, & Jackson, 1979). Strong perseverance usually pays off in performance accomplishments. Studies of manufacturing industries
indicate that the impact that training programs have on the acceptance of production goals and level of productivity is partly mediated by changes in employees’ self-beliefs of efficacy (Earley, 1986).

People’s self-beliefs of efficacy affect how much stress and depression they experience in threatening or taxing situations, as well as their level of motivation. People who believe they can exercise control over potential threats do not conjure up apprehensive cognitions and, therefore, are not perturbed by them. But those who believe they cannot manage potential difficulties experience high levels of stress. They tend to dwell on their deficiencies and view many aspects of their environment as threatening (Ozer & Bandura, 1989). Disbelief in one’s capabilities to attain valued goals that affect one’s sense of self-worth or to secure things that bring satisfaction to one’s life also creates depression (Bandura, 1988a; Holahan & Holahan, 1987a, b; Kanfer & Zeiss, 1983). Through ineffectuous thought, such people distress and depress themselves and constrain and impair their level of functioning (Bandura, 1988b, 1988c; Lazarus & Folkman, 1984; Meichenbaum, 1977; Sarason, 1975).

Self-beliefs of efficacy also affect thought patterns that may be self-aiding or self-hinder ing. These cognitive effects take various forms. Much human behavior is regulated by forethought in the form of cognized goals. Personal goal setting is influenced by one’s self-appraisal of capabilities. The stronger the perceived self-efficacy, the higher the goals people set for themselves and the firmer are their commitments to these goals (Bandura & Cervone, 1986; Locke, Frederick, Lee, & Bobko, 1984; Taylor, Locke, Lee, & Gist, 1984). Many activities involve analytic judgments that enable people to predict and control events in probabilistic environments. Strong belief in one’s problem-solving capabilities fosters efficient analytic thinking. And finally, people’s perceptions of their efficacy influence the types of anticipatory scenarios they construct and reiterate. Highly self-efficacious individuals visualize success scenarios that provide positive guides for performance, whereas those who judge themselves as ineffectual are more inclined to visualize failure scenarios, which undermine performance. One’s perceived self-efficacy and cognitive simulation affect each other bidirectionally. People’s high sense of efficacy fosters cognitive constructions of effective actions, and people’s cognitive reiteration of efficacious courses of action strengthens their self-beliefs of efficacy (Bandura & Adams, 1977; Kazdin, 1979).

The sociocognitive benefits of a sense of personal efficacy do not arise simply from the incantation of capability. Saying something is so should not be confused with believing it. Self-efficacy beliefs are the product of a process of self-persuasion that relies on diverse sources of efficacy information that must be selected, weighted, and integrated (Bandura, 1986). If people’s self-efficacy beliefs are firmly established, they remain resilient to adversity. In contrast, individuals with weakly held self-beliefs are highly vulnerable to change, and negative experiences readily reinstate their disbelief in their capabilities.

Self-Regulation of Motivation and Action Through Goal Systems

Social cognitive theory also emphasizes human capacities for self-direction and self-motivation (Bandura, 1988a). The self-regulation of motivation and action operates partly through people’s internal standards and their evaluations of their own behavior. People seek self-satisfactions from fulfilling valued goals, and they are motivated by discontent with substandard performances. Thus, discrepancies between behavior and personal standards generate self-reactive influences, which serve as motivators and guides for action designed to achieve desired results. Through self-evaluative reactions, people keep their conduct in line with their personal standards.
Hierarchical Dual Control Mechanism

Many theories of motivation and self-regulation are founded on a negative feedback control model (Carver & Scheier, 1981; Kanfer, 1977; Lord & Hanges, 1987). This type of system functions as a motivator and regulator of action through a discrepancy reduction mechanism. Perceived discrepancy between performance and an internal standard triggers action to reduce the incongruity. In negative feedback control, if the performance matches the standard, the person does nothing. A regulatory process in which matching a standard occasions inactivity does not characterize human self-motivation. Such a feedback control system would produce circular action that leads nowhere. In fact, people transcend feedback loops by setting new challenges for themselves.

Human self-motivation relies on discrepancy production as well as on discrepancy reduction. It requires both active control and reactive control (Bandura, 1988a; in press-b). People initially motivate themselves through active control by first setting valued standards that create a state of disequilibrium and then by mobilizing their effort on the basis of what it would take to accomplish what they seek. Feedback control comes into play in one’s subsequent adjustments of effort to achieve desired results. After people attain the standards they have been pursuing, they generally set higher standards for themselves. Their adoption of further challenges creates new motivating discrepancies to be mastered. Thus, self-motivation involves a dual control mechanism that operates through discrepancy production, which is followed by discrepancy reduction.

Diverse Effects of Goals

Many of the activities that people perform are aimed at obtaining future outcomes. Therefore, they must create guides and motivators in the present for activities that lead to outcomes in the future. This is achieved by adopting goals and evaluating one’s progress in relation to those goals. Goals can improve individuals’ psychological well-being and accomplishments in several ways. First, goals have strong motivational effects. Goals provide a sense of purpose and direction, and they raise and sustain the level of effort needed to reach them. When people are unclear about what they are trying to accomplish, their motivation is low and their efforts are poorly directed. Investigations of varied domains of functioning under both laboratory and naturalistic conditions provide substantial converging evidence that explicit, challenging goals enhance and sustain people’s motivation (Latham & Lee, 1986; Locke, Shaw, Saari, & Latham, 1981; Ment, Steel, & Karren, 1987).

Goals not only guide and motivate performance, they also help to build people’s beliefs in their capabilities. Without standards against which to measure their performances, people have little basis either for judging how they are doing or for evaluating their capabilities. Sub-goals serve this purpose well (Bandura & Schunk, 1981). Success in attaining challenging sub-goals increases people’s self-beliefs in their capabilities. Accomplishing challenging goals also creates self-satisfaction and increases one’s interest in what one is doing. The closer the attainments match valued goals, the greater are the positive self-reactions (Bandura & Cervone, 1986; Locke, Cartledge, & Knerr, 1970). Goals have these beneficial effects when they serve as challenges, rather than as onerous dictates.

The beneficial effects of goals are partly determined by how far into the future they are set. Short-term, or proximal, goals raise one’s effort and direct what one does during the short run. Distant goals are too far removed in time to be effective self-motivators. Usually, there are too many competing influences in everyday life for distant aims to exert much control over one’s current behavior. Motivation is best regulated by long-range goals that set the course for one’s endeavors combined with a series of attainable sub-goals that guides and sustains the efforts along the way (Bandura & Schunk, 1981; Bandura & Simon, 1977; Morgan, 1985). Making
complex tasks manageable by breaking them down into a series of subgoals also helps to reduce one's self-demoralization through high aspiration. A person's accomplishment may indicate significant progress when evaluated against a proximal subgoal, but it may appear disappointing if compared against long-range lofty aspirations. People can be making good progress but deriving little sense of accomplishment because of the wide disparity between current standing and distal aspiration.

Recent research into the effects that goals have on complex decision making has shown that challenging goals lead people to use more effort in the development of strategies (Earley, Wojnaroski, & Prest, 1987). However, challenging goals also may lead to suboptimal cognitive processing (Huber, 1985) and the selection of less effective strategies (Earley, Connolly, & Ekegren, in press). Managerial goals that are difficult to attain increase the likelihood of failure and one's vulnerability to self-debilitating modes of thought.

**Self-Influences Governing Cognitive Motivation**

Motivation based on personal standards or goals involves a cognitive comparison process. By making self-satisfaction conditional on matching adopted goals, people give direction to their actions and create self-incentives to help them persist in their efforts until their performances match their goals. The motivational effects do not stem from the goals themselves, but rather from people responding evaluatively to their own behavior. Their 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 the level of one's own performance. Neither performance knowledge without goals, nor goals without performance knowledge has any lasting motivational impact (Bandura & Cervone, 1983; Becker, 1978; Strang, Lawrence, & Fowler, 1978). However, the combined influence of goals and performance feedback heightens motivation.

Cognitive motivation based on goal intentions is mediated by three types of self-influences: affective self-evaluation, perceived self-efficacy for goal attainment, and adjustment of personal standards. As already noted, goals motivate by enlisting self-evaluative involvement in the activity, and perceived self-efficacy determines whether discrepancies between standards and attainments are motivating or discouraging. The goals people set for themselves at the outset of an endeavor are likely to change, depending on the pattern and level of progress they are making (Campion & Lord, 1982). Individuals may maintain their original goal, they may lower their sights, or they may adopt an even more challenging goal. Thus, the third constituent, self-influence in the ongoing regulation of motivation, concerns the readjustment of one's goals in light of one's attainments. Taken together, these self-reactive influences account for a major share of the variation in motivation under different goal structures (Bandura & Cervone, 1983, 1986).

**Analysis of Interactional Causal Structures in Managerial Decision Making**

The remainder of this article presents a detailed analysis of the interactional causal structures that are operating within the context of managerial decision making in a dynamic simulated environment. In this series of experiments, each of the major interactants in the triadic causal structure—cognitive, behavioral, and environmental—functions as an important constituent of the organizational process. The cognitive determinant is indexed by self-beliefs of managerial efficacy, personal goal setting, and quality of analytic thinking. The managerial choices that are actually executed constitute the behavioral determinant. The portrayed and objective properties of the organizational envi-
ronment, the level of challenge it prescribes, and its responsiveness to managerial interventions represent the environmental determinant. By including multiple trials, the experiments advance understanding of how the interactional causal structure operates and changes over time.

Self-referent phenomena are at the very heart of causal processes. They not only contribute to the meaning and valence of most external influences, but they also function as important proximal determinants of motivation and action. The self-regulatory mechanisms governing managerial decision making, therefore, figure prominently in the causal analysis.

**Multifaceted Nature of Managerial Decision Making**

Descriptive studies of managerial activities portray managers as continuously involved in making decisions and structuring the efforts of others toward desired outcomes (Kotter, 1982; Mintzberg, 1973; Stewart, 1967). The managerial decision environments consist of dynamic flows of varied information and resources from diverse sources. Feedback concerning the adequacy of decisions is often delayed, multidimensional, and tainted by biases. Decision tasks usually include multiple stages, in which people's decisions at each stage are influenced by their prior decisions and informative experiences. Within this decisional context, managers must continually link short-term goals to more distal organizational objectives along ill-structured means-ends pathways.

Despite the evidence that much of what managers do involves decision making in complex and uncertain environments, little attention has been devoted to systematic analysis of managerial decision processes (Schweiger, Anderson, & Locke, 1985). Decision-making research conducted within the framework of cognitive psychology has contributed to the understanding of how perceptual and cognitive processes affect decision making. However, the range of variables encompassed by these decision models and the types of decisions studied limit the generalizability of the findings to managerial decision making.

Some of the cognitive research is based on paramorphic models, such as the lens model of social judgment (Brunswik, 1952). This approach describes the relationship between inputs and outputs of decisions, but it ignores the dynamic processes by which individuals acquire information and make and implement decisions (Hogarth, 1981; Schweiger et al., 1985). One's search processes and feedback from executed decisions affect one's level of motivation and learning in natural decision environments (Klayman, 1984; Wood & Bailey, 1985). Managers must be concerned with the implementation and feedback aspects of decisions because these become important inputs to subsequent decisions in the continuous flow of organizational activity for which they bear responsibility. Unlike subjects in decision experiments, managers must live with the consequences of their errors in judgment and faulty decisions.

To complicate matters further, managers do not simply react to decision environments that are carefully demarcated for them. Rather, they create their own decision support systems and selectively process the information generated by these constructed environments (George, 1980). Managerial decision making requires that the manager work through others within organizational contexts that are characterized by hierarchy and division of labor and specialization. Many of the important decisions that managers must make involve allocating work roles and managing and monitoring the collective efforts of the people they oversee (Mintzberg, 1973).

Cognitive approaches to decision making are further limited because they usually ignore the impact that affective, motivational, and other self-referent influences have on one's information acquisition, evaluation, and choice. In naturally occurring decision environments, interactions between situational demands and self-referent factors can exert a powerful influence on the decision-making process. For example,
in studies of organizational decision making, perceived threats and setbacks have been shown to reduce managers' willingness to seek new information or to incorporate it into their choices (Tjosvold, 1984), to strengthen their commitment to past courses of action (Brockner & Rubin, 1985), and to narrow their focus, or to foster a retrospective focus, in their search behavior (Conlon & Parks, 1987; Janis & Mann, 1977). However, managers do not always become closed-minded in situations of threat. They may explore opposing opinions, search for disconfirming information, and strive to reconcile conflicting values in efforts to arrive at decisions that bring success (Maoz, 1981).

When research has addressed motivational mechanisms, it has often been conducted with relatively simple tasks in which individual effort can directly affect the level of performance. Such tasks limit the applicability of the findings to managerial decision making, in which performance accomplishments must be achieved through group effort. Goal setting is the most widely researched and validated theory of work motivation (Locke & Latham, 1984; Mento, Steel, & Karren, 1987). However, until recently, most of the studies on the effects of goal setting have included simple tasks (Wood, Mento, & Locke, 1987). To achieve organizational performance goals, managers must create appropriate production functions, allocate people to those functions, and continually adapt their organizational practices to changes in available resources and situational circumstances (Kotter, 1982; Mintzberg, 1973). Effective management of these ongoing activities calls for high levels of motivation and effective strategies for organizing the collective effort productively.

The multifaceted nature of managerial activities and their intricate linkage to organizational performance introduces complexities in the relation between personal goals and group attainment. In most previous research, self-set goals are applied to personal performances, over which individuals can exercise direct control by regulating their attention and level of effort. In organizational environments, managerial goals must be socially mediated through the coordinated efforts of others. Managerial effort alone does not ensure attainment of a group goal. Moreover, efforts to enhance the level of organizational functioning often require constituent changes in particular aspects of the social structure and the way in which social resources are allocated. Systematic pursuit of such operational subgoals contributes to eventual success, but it does not necessarily produce sizable gains in organizational performance during the short run. Therefore, generalizations regarding the performance-enhancing effects of goal challenges at the organizational level must be tempered by considerations of these complexities.

In organizational environments that require complex decision making, managers must master serviceable managerial rules that enable them to predict and exercise influence over the collective effort. In order for them to discern predictive rules, they must effectively process multidimensional information that contains ambiguities and uncertainties. Predictive factors usually are related probabilistically, rather than invariably, to future events, which leaves some degree of uncertainty. In ferreting out predictive rules, people must draw on their state of knowledge to generate hypotheses about predictive factors, to weight and integrate these factors into composite rules, to test their judgments against outcome information, and to remember which notions were tested and how well they worked. Less skilled decision makers formulate vague composite rules, they tend to alter several factors concurrently, making it difficult to assess the source of multiply produced effects, and they make less effective use of informative outcome feedback (Bourne, 1965; Bruner, Goodnow, & Austin, 1956).

For the formal characteristics of the simulated organization used in this research program, managers must learn the form of the functions relating several motivational factors to aggregate
outcomes. Some of the factors involve nonlinear and compound rules, which are more difficult to learn than are linear ones (Brehmer, Hagafors, & Johansson, 1980). Moreover, they must figure out the best way to integrate the set of rules and to apply them discernibly to each member of the group. To achieve all this, they must generate hypotheses about functional relations for different motivational factors and they must integrate these hypotheses into a coherent managerial effort.

It requires a strong sense of efficacy to deploy one’s cognitive resources optimally and to remain task oriented in the face of organizational difficulties and failures. Those who judge themselves ineffectual in coping with environmental demands tend to become more self-diagnostic than task-diagnostic (Bandura & Dweck, 1988). Such self-referent intrusive thinking creates stress and undermines effective use of capabilities by diverting one’s attention from how best to proceed and centers it on personal deficiencies and possible adverse outcomes. People who believe strongly in their problem-solving capabilities remain highly efficient in their analytic thinking in complex decision-making situations. Quality of analytic thinking, in turn, affects their accomplishments.

In the postulated self-regulatory causal structure that governs organizational management, perceived self-efficacy enhances organizational performance both directly and indirectly by the effect it has on people’s goal setting and use of analytic strategies. The stronger the perceived self-efficacy, the more challenging are the organizational goals subjects set for themselves and the more systematically they use analytic strategies to discover the managerial rules. Their high self-set goals and systematic analytic thinking, in turn, enhance the level of organizational performance. Tests of the regulatory causal structure were performed in conjunction with experimentally varied organizational properties and belief systems that can enhance or undermine the operation of the self-system.

**Organizational Simulation**

The mechanisms and outcomes of managerial decision making do not lend themselves readily to experimental analysis in actual organizational settings. The ongoing interaction among behavioral, cognitive, and environmental factors cannot be controlled in a way that can elucidate causal processes. A simulated environment permits systematic variation of theoretically relevant factors and precise assessment of their impact on organizational performance and the psychological mechanisms through which they achieve their effects. The temporal dynamics of triadic reciprocity require the sequential measurement of interacting factors in order to isolate the effects of the constituent factors. The design of the simulation used in the experiments discussed here permits the isolation of time-ordered effects of the different classes of variables in social cognitive theory. By incorporating multiple trials in the simulated environment, it is possible to examine temporal interdependencies and cumulative effects in decision-making processes. Thus, the simulation provides an excellent vehicle for systematically examining the model of triadic reciprocal causation.

The characteristics of the simulated organization are presented elsewhere in some detail and will be only summarized here (Wood, Bandura, & Bailey, in press). Business school graduates served as managers of the simulated organization. In executing the managerial task, they were asked to allocate employees from a roster to the different production subfunctions, in order to complete the work assignments within an optimal period. By correctly matching employees to job requirements, the managers could attain a higher level of organizational performance than if employees were poorly matched to jobs. To assist them in this decision task, they received descriptions of the effort and skill required for each of the production subfunctions and the characteristics of each employee. This informa-
tion described employees’ skills, experience, and motivational level; employees’ preference for routine or challenging work assignments; and employees’ standards of work quality.

In addition to allocating employees to jobs, the managers were asked to decide how to use goals, instructive feedback, and social incentives to guide and motivate their supervisees. For each of these motivational factors, the managers were given a set of options representing the types of actions that managers might take in an actual organization. A mathematical model was used to calculate the hours taken to complete a production order based on the adequacy of managers’ allocation of employees to jobs and their use of the three motivational factors. The group performance for each production order or trial was reported to the managers as a percentage of a preset standard number of hours to complete each manufacturing order. Managers were asked to make decisions and to react to the consequences of those choices. A more detailed description of the mathematics and logic of the model has been presented in an earlier publication (Wood & Bailey, 1985).

The managers performed the managerial task over an extended series of trials and received feedback about how well their group performed. In order to discover the managerial rules, they had to test options, to cognitively process the outcome feedback information of their decisions, and to continue to apply analytic strategies in ways that would reveal the governing rules. To enhance the performance of their organization, managers had to set the optimal level of challenge for each employee, tailor the supervisory feedback to the adequacy of the individual performance, and use social incentives beneficially. In an organizational setting, the impact that social incentives have on performance is affected by social-comparison processes as well as by the nature of the incentives. Managers, therefore, had to learn a compound decision rule that combined incentive and equity factors.

Knowing rules does not ensure optimal implementation of them. Managers also had to gain proficiency in tailoring the applications of the rules to individual employees, and they had to apply these rules together to achieve desired results. At several points in the simulation, both the managers’ perceived managerial self-efficacy and the goals they sought to achieve were assessed. The adequacy of their analytic strategies for discovering managerial rules and the level of organizational performance they achieved were also measured.

Factors Affecting Management of Organizational Performance

A series of experiments was conducted that varied the properties of the organizational environment and the cognitive orientations that were expected to affect the management of organizational performance (Bandura & Wood, in press; Wood & Bandura, in press; Wood et al., in press). Some of these studies involved induction of self-aiding or self-hindering belief systems.

Conceptions of Managerial Capability

People’s conceptions of their abilities can act upon the self-regulatory influences that govern ongoing motivation and personal accomplishments in complex decision-making environments. People tend to construe cognitive ability either as an acquirable skill or as a fixed inherent capacity (Bandura & Dweck, 1988; Dweck & Elliott, 1983). Those who view cognitive ability as an acquirable skill regard it as continually enhanceable through knowledge and the perfection of one’s competencies. They adopt an inquiring learning goal. They seek challenges that provide opportunities to expand their knowledge and competencies. For them, errors are regarded as a natural, instructive part of an acquisition process. They judge their capabilities more in terms of personal improvement than by comparison against the achievement of others.
People who construe cognitive ability as a more or less fixed capacity regard their performance level as diagnostic of basic intellectual aptitude. For them, errors and deficient performances, therefore, carry personal and social evaluative threats. People who adopt this conception of ability tend to pursue safe performance goals that demonstrate their competence. They prefer tasks that minimize errors and permit ready display of intellectual proficiency, even if this is at the expense of expanding their knowledge and learning new skills. To them, high effort, which is often required to develop competencies in complex activities, also poses evaluative threats because it is indicative of low ability. An entity conception of ability is less conducive to effective management of failure than is the view of ability as an acquirable skill (Elliott & Dweck, 1988).

The psychological effects of these conceptions of ability had on the managerial functioning of talented business school graduates as they managed the simulated organization (Wood & Bandura, in press) were examined. Before they directed the simulated organization, one group of managers was told that complex decision making reflects an acquirable skill and that the simulation provides a vehicle for cultivating decision-making capabilities. A second group was told that complex decision making reflects inherent cognitive capacities and that the simulation provides a vehicle for gauging the underlying cognitive aptitude.

The impact that these alternative conceptions of ability had on the self-regulatory mechanisms that governed the utilization skills and performance accomplishments is seen in Figure 2. Managers who were led to construe their decision-making ability as reflective of their inherent cognitive aptitude were beset by increasing doubts about their managerial efficacy as they encountered problems. They became more and more erratic in their decisional activities, they lowered their organizational aspirations, and they achieved progressively less with the organization they were managing. In marked contrast, managers with an induced conception of ability as an acquirable skill fostered a highly resilient sense of personal efficacy. Even though they were assigned taxing goals that were difficult to fulfill, these managers remained steadfast in their perceived managerial self-efficacy, they continued to set themselves challenging organizational goals, and they used analytic strat-

![Graph](image-url)

**Figure 2.** Changes in perceived managerial self-efficacy, the performance goals set for the organization relative to the preset standard, effective analytic strategies, and achieved level of organizational performance across blocks of trials under acquirable skill and entity conceptions of capability. Each trial block comprises six different production orders (Wood & Bandura, in press).
gies in ways that aided discovery of optimal managerial decision rules. Such a self-efficacious orientation, which is well suited for handling adversity, paid off in uniformly high organizational attainments.

Induced differential conceptions of ability bias how similar substandard performances at the outset are cognitively processed. A person’s construal of substandard attainments as indicators of deficiencies in inherent aptitude gradually creates an ineffectual self-schema in the particular domain of functioning, whereas a person’s construal of substandard attainments as instructive guides for enhancing personal competencies fosters an efficacious self-schema. Such evolving self-beliefs further bias the person’s cognitive processing of outcome information and promote actions that create confirmatory behavioral evidence for them. This produces an exacerbation cycle of motivational and performance effects, in accordance with the model of reciprocal causation.

**Organizational Controllability and Performance Standards**

Belief systems regarding how controllable an organization is also can exert a substantial impact on the quality of organizational management. There are two aspects to the exercise of control that are especially relevant to management of organizational performance (Bandura, 1986; Gurin & Brim, 1984). The first aspect concerns the level of personal efficacy needed to effect changes through enlistment of effort and creative use of capabilities and resources. This constitutes the personal side of the transactional control process. The second aspect concerns how changeable or how controllable the environment is. This facet represents the level of system constraints and opportunities that are available for one to exercise personal efficacy.

Neither self-efficacy nor social environments are fixed entities. One’s operative self-efficacy is a generative capability in which multiple sub-skills must be continuously improvised to manage ever-changing circumstances. Therefore, individuals who have the same skills may perform variably, depending on how well they use the skills they possess (Bandura, 1986, 1988c). For the most part, the social environment constitutes a potentiality that is actualized by appropriate action. Thus, what parts of the potential environment are actualized and what forms they will take depend on how people behave. Human behavior is, of course, governed largely by people’s perceptions of their efficacy and the social environments, rather than simply by their objective properties. Thus, individuals who believe themselves to be ineffectual are likely to effect limited change, even in environments that provide many potential opportunities. Conversely, those who have a firm belief in their efficacy, through ingenuity and perseverance, figure out ways of exercising some measure of control in environments that contain limited opportunities and many constraints.

In the transactions of everyday life, individuals’ beliefs regarding self-efficacy and how controllable the environment is are not divorced from experiential realities; rather, these beliefs are products of reciprocal causation (Bandura, 1986). Thus, when people believe the environment is controllable on matters of import to them, they are motivated to exercise fully their personal efficacy, which enhances the likelihood of success. Experiences of success, in turn, provide behavioral validation of personal efficacy and environmental controllability. If people approach situations as largely uncontrollable, they are likely to exercise their efficacy weakly and abortively, which breeds failure. Over time, failures take an increasing toll on both one’s perceived self-efficacy and one’s beliefs about how much environmental control is possible.

To gauge the impact that perceived controllability has on the self-regulatory factors governing organizational management, differential beliefs about the controllability of organizations (Bandura & Wood, in press) were experimentally induced in the research program. For half the managers, organizations were portrayed as
difficult to predict and control. The work habits of employees were characterized as being not easily changeable, and not all employees are fully responsive even to helpful guidance. Small changes do not necessarily improve the overall outcomes. For the others, organizations were portrayed as predictable and controllable. The work habits of employees were characterized as more easily changeable than would be generally assumed, and most employees were characterized as responsive to helpful guidance. Small changes can set in motion processes that improve the overall outcomes. Within each of the controllability conditions, half the managers were assigned easy-to-reach organizational standards for the simulated organization. The other half were given difficult organizational standards to meet.

The contrasting effects of the induced belief systems are summarized in Figure 3. People who managed the simulated organization under a cognitive set that organizations are not easily changeable quickly lost faith in their managerial capabilities, even when performance standards were within easy reach, and they lowered their sights for the organization. If managers make an effort to manage an organization that is regarded as relatively unchangeable, they feel a sense of personal inefficacy to effect change which, in turn, makes it difficult for them to realize group accomplishments. Although a sense of uncontrollability is personally and socially handicapping, viewing an organizational environment as capable of being influenced fosters productive action. Managers who operated under a cognitive set that organizations are controllable displayed a resilient sense of managerial efficacy, set themselves increasingly challenging goals, and used good analytic thinking for discovering effective managerial rules. They exhibited high resiliency of self-efficacy, even when difficult organizational standards eluded them. Indeed, they maintained a stronger sense of efficacy than did their counterparts, who managed the organization under readily attainable standards but who had the view that there were severe limits on how much one can change organizational functioning. The divergent changes in these self-regulatory factors were accompanied by large differences in organizational attainments.

Resiliency of self-efficacy has considerable functional value because major accomplishments are rarely achieved through quick successes. Such accomplishments are realized by self-efficacious people who persevere in the face of failures and setbacks, who learn from their mistakes, and who construe obstacles as challenges, rather than as reflections of their deficiencies. To abort one's efforts prematurely or to undermine them by self-in efficacious thinking precludes significant personal accomplishments.

Organizational Complexity

Learning the rules in dynamic environments through the results of action alone is difficult at the individual level of behavior, let alone the collective level (Brehmer, 1980; Klayman, 1984). Managerial decision tasks vary in the complexity of judgments required and the nature of decision rules that must be mastered. The complexity of decisions can vary along several dimensions (Wood, 1986). One aspect of complexity concerns the number of relevant factors available for consideration, their informativeness, and the number of judgments that must be made. Complexity also increases if managers must coordinate and make trade-offs between different decisions. A third aspect of complexity relates to the stability of different predictive factors in the probabilistic environment. Managers can learn the factors that have highly predictable effects and can incorporate them more readily into their composite decision rules rather than factors that change in their predictive value according to changes in circumstances.

Much of the research on the effects of various motivational mechanisms has been conducted on relatively simple tasks. By contrast, in complex activities, individuals' increased effort is not
translated into performance gains unless they develop effective strategies for deploying that effort productively (Wood & Locke, in press; Wood, Mento, & Locke, 1987). As the information-processing demands of activities increase, managers need greater cognitive resources to function competently. When task demands approximate the limits of managers' cognitive capabilities, external motivators, such as incentives or assigned goals, can undermine their performance by diverting their attention from how best to perform the task to concerns about the consequences of their failure (Humphreys & Revelle, 1984; Wood, 1985).

The influence that complexity of organizational demands had on managerial performance was evaluated in a study in which both organizational complexity and managerial goal assignments were varied (Wood, Bandura, & Bailey, in press). Complexity was varied by changing the number of employees the managers supervised and the degree of match between employees' skills and job functions. In the simple organization, the managers took charge of a small number of employees, and each employee was best suited for only one job function. In the complex organization, the managers supervised more than twice as many employees, and optimal matching of employees to jobs required several trade-offs among employees who were equally suited for the same job. This placed greater demands on managers to handle both component and coordinative sources of complexity (Wood, 1986). The managers were assigned either the general goal to do their best or the explicit goal to substantially improve their group's performance.

As shown in Figure 4, challenging goals enhanced organizational performance under low complexity, but they had no effect when the managerial demands were more complex. This is not because the managers rejected the challenging goals or lacked sufficient commitment to try to achieve them. The finding is, perhaps, better explained in terms of the temporal and social complexity of the links among managerial effort, group attainments, and the multifaceted nature of goal setting in complex social environments.
Goal attainment had to be socially mediated through the efforts of the group of employees in the simulated organization. Managerial effort alone will not augment group performance if managers have not discovered how best to match motivational factors to employee attributes in order to achieve good collective outcomes. Personal goals influenced performance in the earlier trials, but they did not in the later trials when the roster of employees had been changed. To the extent that significant changes in the dynamic components of an environment reduce the transferability of managers’ prior experiences, these changes temporarily disrupt the motivational effects that goal setting has on performance.

In complex tasks, proximal subgoals enhance individuals’ performance attainments, whereas distal goals may have little effect (Bandura & Schunk, 1981). The managers’ reports revealed additional complexities about their efforts to achieve socially mediated outcomes. Many of them directed their efforts at operational subgoals, such as improving the performance of one employee or achieving a better allocation of social rewards. Careful attention to such sub-
goals eventually will improve the level of organizational attainments, but notable gains may not be achieved immediately.

Neither complexity nor goal assignment affected the self-regulatory factors. In path analyses, the self-regulatory influences had comparable effects on managerial performance across the differing levels of goal assignment and organizational complexity.

**Analysis of Causal Structures**

The causal ordering of the self-regulatory influences on organizational attainments in this set of experiments was tested by path analysis computed on the combined data from the set of simulation studies. The direction of causality in the path model is based on theoretical propositions from social cognitive theory and the temporal sequencing of variables in the simulation. In this conceptual model (Bandura, 1986), prior performance attainments influence managers’ perceived self-efficacy and personal goals, which, in turn, influence analytic strategies and subsequent performance. Prior performance was included as the first factor in the analysis as a proxy for possible determinants other than the self-regulatory influences examined in these studies. Perceived self-efficacy was entered second because beliefs about their capabilities influence both the goals people set for themselves and the proficiency of their analytic strategies. Perceived self-efficacy also contributes independently to performance. Managers’ personal goals were expected to affect subsequent performance directly through the mobilization of effort and indirectly by their influence on analytic strategies. The quality of their analytic strategies would have a direct influence on performance attainments through allocation of resources and adjustment of motivational factors. The full set of structural equations representing the hypothesized causal relations were analyzed separately for the different phases of the organizational simulation.

The standardized path coefficients that were significant beyond the .05 level are shown in Figure 5. In both phases of the simulation, the relation of prior organizational performance to subsequent performance is partly mediated by managers’ perceived self-efficacy, personal goals, and analytic strategies. A significant direct relation also was found between prior and subsequent organizational performance.

In the initial phase, perceived self-efficacy enhanced the level of organizational performance through its effects on managers’ goal setting and analytic strategies. The structure of significant causal relations is replicated in the subsequent phase, except that the contribution of prior performance is weaker, and perceived managerial self-efficacy plays a larger causal role in organizational performance, affecting it both directly as well as through managers’ goal setting and analytic strategies. Personal goals influenced managers’ performance indirectly through the positive effects they had on analytic strategies. Effective use of analytic strategies enhanced organizational performance, after controlling for all prior determinants. Thus, comparison of the causal structures at the different phases of organizational management reveals that when initially faced with managing a complex, unfamiliar environment, managers relied heavily on performance information in judging their efficacy and in setting their personal goals. But, as they began to form a self-schema of their efficacy through further experience, the performance system was regulated more strongly and intricately by their self-conceptions of efficacy. The specified model accounted for the major share of the variance in organizational performance attainments in both the initial phase, $R^2 = .75$, $p < .001$, and the subsequent phase, $R^2 = .84$, $p < .001$ of the organizational management.

The overall findings of this research program demonstrate the utility of social cognitive theory for the study of motivation and performance in the domain of managerial decision making. The results show that the interaction of cognitive and motivational processes is important to an under-
Figure 5. Path analysis of causal structures. The initial numbers on the paths of influence are the significant standardized path coefficients (ps < .05); the numbers in parentheses are the first-order correlations. The network of relations on the left half of the figure are for the initial managerial efforts, and those on the right half are for later managerial efforts.
understanding of how managers approach the daily stream of decisions that must be made in complex and uncertain decision environments.

Social cognitive theory offers several advantages over existing models of managerial decision making. First, it is not constrained by the assumption of sequential phases of search, evaluation, choice, and implementation activities (Mintzberg, Raisinghani, & Theoret, 1976; Simon, 1960). Attempts to validate the specified phases within different decision models have failed to support a methodical sequencing of activities (Witte, 1972). Many of the decision activities are performed simultaneously, and because of the dynamic, evolving nature of much managerial work, managers frequently cycle back and forth between different decisional activities (Mintzberg et al., 1976). These dynamic conditions create reciprocal influences among personal factors, decisional actions, and environmental effects.

Another contribution of this model is the incorporation of self-regulatory factors in the analysis of managerial decision processes. As the abovementioned studies have shown, self-referent influences are important determinants of managers' analytic thinking and performance accomplishments in complex decision environments. These factors influence how well managers cope with organizational demands and how well they learn from failures, setbacks, and successes. Even managers who enjoy remarkable success operate in environments that constantly threaten their sense of self-efficacy (George, 1980). How they cope with obstacles and adversities and how they remain resilient in the face of recurrent stressors may be more important than their rate of success when explaining the evolution of managerial careers (Rochlin, 1965; Zaleznik, 1967).

The strong effects that induced belief systems have on managerial capability and organizational controllability are relevant to issues of organizational culture. This line of theorizing and research concerns ideational themes or belief systems in organizations that influence people's interpretations of events and organizational action (Martin & Siehl, 1983; Schein, 1985). Beliefs about the nature of managerial capability and organizational controllability might represent specific manifestations of an organization's ideational culture, in a manner similar to Schall's (1983) analysis of culture as informal communication norms. Martin and her colleagues (Martin, Feldman, Hatch, & Sitkin, 1983) have shown that perceived personal control is a major theme in organizational stories that are expressions of organizational cultures. How these belief systems are transmitted through modeling, incentive practices, selection systems, and staff development activities would be a fruitful area for research, given the effects these belief systems have on the self-regulatory mechanisms that govern managerial performance. Social cognitive theory specifies psychological mechanisms by which organizational cultures can affect individual behavior.

**Concluding Remarks**

The value of psychological theory is judged not only by its explanatory and predictive power, but also by its operational power to improve human functioning. Social cognitive theory provides a conceptual framework for clarifying the psychological mechanisms through which social-structural factors are linked to organizational performance. Within the model of triadic reciprocal causation, both personal and organizational factors operate through a bidirectionality of influence. Many conceptual systems are dressed up in appealing terminology, but they remain prescriptively ambiguous on how to effect psychosocial changes. Social cognitive theory provides explicit guidelines about how to equip people with the competencies, the self-regulatory capabilities, and the resilient sense of efficacy that will enable them to enhance both their well-being and their accomplishments.
References


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