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IMPLICIT THEORIES AND SELF-REGULATORY PROCESSES: IMPLICATIONS FOR ORGANIZATIONAL BEHAVIOR

by

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A dissertation submitted to the Graduate Faculty in Psychology
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy, The City University of New York

1999

This manuscript has been read and accepted by the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

January 25, 1999
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Abstract

IMPLICIT THEORIES AND SELF-REGULATORY PROCESSES: IMPLICATIONS FOR ORGANIZATIONAL BEHAVIOR

by

Anna M. Tedesco

Adviser: Professor Donna E. Thompson

The present study examined the impact of individuals' achievement goal orientation on affect, intrinsic motivation, and performance. It was proposed that individuals subscribe to different implicit theories of decision-making ability (malleable quality or a fixed trait). These theories determine the goals adopted in achievement situations, which, in turn, set up different motivational patterns and produce different outcomes. Self-critical tendency was included as an additional antecedent of goal orientation. It was hypothesized that self-efficacy mediates the relationship between goal orientation and the outcomes of affect, intrinsic motivation, and performance. Lastly, perceived ability was believed to moderate the relationship between goal orientation and self-efficacy.

Participants performed a computerized management simulation task under either a high or low ability condition, to which they were randomly assigned. The ability manipulation was introduced through bogus feedback on a management skills inventory. Performance, operationalized as the number of shifts in which there were problems, was automatically calculated during the simulation. Self-report measures of implicit theory, self-critical tendency, goal orientation, affect, and intrinsic motivation were used.

The results of the study indicated that implicit theory of decision making and self-critical tendency did not predict goal orientation. Regression analysis yielded

nonsignificant results. However, the relationship between implicit theory and goal orientation was positive and significant, as expected.

It was hypothesized that individuals' goal orientation would have a differential impact on the outcomes of affect, intrinsic motivation, and performance for individuals in the low ability condition. The results show that a more dominant learning orientation does not result in more positive affect, greater task enjoyment, and better performance. However, the ability manipulation did have the expected effect on these outcomes.

The results of a path analysis do not support the hypothesis that ability has a moderating role in the relationship between goal orientation and the outcomes of self-efficacy, affect, and performance. The hypothesis that self-efficacy has a mediating role in the relationship between goal orientation and outcomes was partially supported.

These findings are discussed in relation to previous research and theoretical models. Study design and instrument issues are explored. Finally, organizational research directions and managerial implications are presented.

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Chapter 1

Introduction

From time to time, life as a leader can look hopeless. After taking a hard look in the mirror at your leadership, you may be overwhelmed by the focus on what's needed. To help you, consider a man who's lived through this:

Failed in business in '31

Defeated for the legislature in '32

Again failed in business in '34

Sweetheart died in '35

Had a nervous breakdown in '36

Defeated in election in '38

Defeated for Congress in '43

Defeated for Congress in '46

Defeated for Congress in '48

Defeated for Senate in '55

Defeated for Vice-President in '56

Defeated for Senate in '58

Elected President in '60

This man was Abraham Lincoln. (Schatz, K. & Schatz, L., 1986, p.)

This passage describes a man who, although faced with challenges, defeats and failure, continued to strive. He repeatedly placed himself in difficult situations, and he eventually obtained one of the most powerful and visible positions in the United States. Another person might have reacted quite differently by abandoning the political arena and instead choosing a seemingly easier, and certainly less public path that ensured success.

Situational versus Trait Determinants of Behavior

Why? What accounts for these different reactions and approaches to life? Are they attributable to a particular personality characteristic(s) or dispositional tendency or to certain situational features? It is, most likely, a combination of both. Individuals certainly possess certain traits, characteristics, and dispositions that predispose them to respond in certain characteristic patterns[1]. However, situational cues can sometimes override these dispositions, alter them, or, at the very least, interact with them.

This perspective illustrates the long ensuing battle between situational and trait theorists in personality psychology. Trait theorists argue that different individuals' diverse reactions to similar situations evidence different inherent personality characteristics that predispose individuals to behave in certain ways. Research supporting this position has shown high cross-situational consistency of responses as predicted by personality traits (e.g., Murtha, Kanfer, & Ackerman, 1996). However, there is equally compelling research which shows a lack of cross-situational consistency of behavior (Murtha, et al.,

[1] As it is not directly relevant to the arguments or research proposed, the debate on the genetic versus environmental determination of personality is not presented here.

1996). Situation theorists argue that this research lends support to their position that individuals' behavior is determined primarily by environmental stimuli.

These conflicting empirical findings have resulted in an effort to incorporate both perspectives into personality theory. Falling under the rubric of interactionism this perspective suggests that observed intentions, responses, and behavior are jointly affected by person and situation characteristics (Murtha, et al., 1996). Although several interactionist models have been proposed, the battle between ineractionist and situational theorists is not resolved (Murtha, et al., 1996). Part of the reason for this is that "no interactionist representation of personality has been developed that allows for the identification of interactionist taxonomies of personality, which would incorporate both situational and trait effects" (Murtha, et al., 1996, p. 193). Within such a taxonomy, observed responses would be arranged based on similarity in kind or nature of the response and the similarity of the situation in which the response occurs.

However, even if such taxonomies are developed, they are content oriented. As such, they may help explain why and when behaviors occur, but they cannot explain how they occur. In order to answer this question, a social-cognitive perspective, which incorporates self-regulation[2], is necessary. Self-regulation refers to internal processes that enable an individual to guide his/her goal directed activities over time and across contexts. These processes include monitoring, appraisal, and coping activities that stimulate intentions, cause enactment of behavior, and lead to goal attainment (Bagozzi, 1992).

---

[2] Terms used interchangeably with self-regulation in the literature include freedom, autonomy, agency, responsibility, maturity, ego-strength, will-power, self-control, choice, purposiveness, self-direction, voluntary action, self-sufficiency, morality, consciousness, free will, independence, conscientiousness, self-discipline, intentional action, self-intervention, intrinsic motivation, self-determination, and volition (Karoly, 1993).

Organizational Behavior

In work settings we frequently observe individuals react differently when they encounter similar situations. Negative events, setbacks, and failures, such as receiving negative performance feedback, being rejected for a position, being passed over for a promotion, or being laid off may convey different messages to different people, prompting different motivational patterns. "Some view a difficulty as a challenge that can be mastered with additional effort and ingenuity while others view it as an indicator of low ability and are more pessimistic about potential improvements" (VandeWalle, 1997). Different thoughts about oneself, others, and the world; affect; and behavior represent these different motivational patterns. For example, those who experience an obstacle as a failure are likely to experience changes in self-cognitions including a decrease in self-esteem, self-efficacy, or both. Affectively, they may experience depression and respond with a variety of emotions, including anxiety and sadness. Behaviorally, these individuals may reduce effort, use ineffective strategies, avoid challenges and make choices that emphasize short-term success at the expense of opportunities for future development. But what accounts for these different patterns?

Social-Cognitive Approaches to Understanding Organizational Behavior

A social-cognitive approach, with an emphasis on cognitive and regulatory processes for understanding organizational behavior, has been advanced by several researchers (e.g., Latham & Saari, 1979; Manz & Sims, 1980). According to this perspective, organizational behavior is a function of internal and external cues and consequences and cognitive mediation (Davis & Luthans, 1980). The organizational participant (including

cognitive processes), the organizational environment (including other organizational participants and variables), and organizational behavior are interdependent and interactive variables in a triadic reciprocity. Organizational behavior affects and is affected by the organizational participant, the environment, and person-situation interactions. The mediating role of cognitive processes is conceptualized as the self-regulation of cognitions and processes that influence individual behavior and impact subsequent performance. Some of the social-cognitive concepts, models and self-regulatory mechanisms that have been explored in attempting to understand organizational behavior include: need for achievement (Atkinson, 1957; McClelland, 1951), scripts and script processing (Gioia & Manz, 1985; Gioia & Poole, 1984), attributions and attributional style (Phillips & Lord, 1981), goal setting (Locke & Latham, 1990), self-monitoring (Anderson & Tolson, 1989) and self-efficacy (Cervone, Jiwani, & Wood, 1991; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990).

Although the focus of each concept is unique, they are similar in that they identify particular cognitive representations as reflections of individual differences in personality that impact interpretations of reality and generation of behaviors. Predictions are based not only on underlying person variables, but also on the features of the situation and the interaction of the two. Further, several of these concepts are complimentary and can be integrated for greater explanatory power. For example, goal setting appears to be influenced by self-efficacy beliefs. The stronger perceived efficacy, the higher the goals people set for themselves and the stronger their commitment to these goals (e.g., Bandura & Cervone, 1983; Taylor, Locke, Lee & Gist, 1984).

Motivation and Organizational Behavior

Clearly then, individual differences in motivational patterns are important in understanding many aspects of organizational behavior. In fact, in our search to understand organizational behavior, perhaps no topic is more salient than motivation. Motivation in organizations is a highly complex phenomenon that affects, and is affected by, a multitude of factors at the individual, group, and organizational level. As such, work motivation has been one of the most sustained areas of interest for both organizational researchers and management practitioners.

On the organizational/practice side, organizations are increasingly using surveys and other methods to assess employee morale, to determine the sources of motivation and to relate these sources to various employee behaviors such as absenteeism and turnover and to organizational outcomes such as profits (Burke, Coruzzi, & Church, 1996). Different organizational structures, programs, policies, and practices, including multi-rater feedback, performance-based reward and compensation systems, self-managed work teams, and job redesign, are being implemented to motivate employees and subsequently increase organizational productivity and performance. However, the impact of these initiatives on these various outcomes is often ambiguous. It appears that "some of the things work for some of the people some of the time". That is, the efficacy of these initiatives is questionable for they appear to impact individuals differentially. While there are certainly many intervening variables involved, including the impact of the larger external environment, individual differences and organizational factors probably account for a considerable amount of variance in outcomes.

While motivation is not directly observable, certainly the behaviors and products of motivation are (Kanfer, 1990). The three motivation outcomes most often researched are the direction, intensity, and persistence of behavior. Applied to work settings, motivation refers to what a person does (direction), how hard a person works (intensity), and how long a person works (persistence) (Kanfer, 1990). On the science/academic side, psychological and management journals abound with empirical articles on motivation and its relation to work attitudes, organizational commitment, absenteeism, turnover, productivity, and performance.

There are many motivation theories that have been applied to work settings. According to Kanfer (1990), they can be classified into one of three paradigms: (1) need-motive-value theories, which emphasize the role of personality, dispositions, and values (e.g., need for achievement); (2) models of cognitive choice, which emphasize cognitive processes involved in decision-making and choice (e.g., equity theory); and (3) self-regulation-metacognition theories, which emphasize the motivational processes or self-governing cognitive processes that determine behavior and performance (e.g., self-efficacy). This third paradigm has the advantage of linking intentions, goals, behavior, and performance.

Several researchers have, in fact, argued that each of the many existing motivation theories is limited in its ability to understand and predict behavior. They believe that in order to improve motivation theory, existing models representing the three paradigms should be integrated into a more comprehensive model, thus yielding greater predictive validity and utility (e.g., Katzell & Thompson, 1990; Locke, 1991). Others argue that the conceptualization and operationalization of key constructs in these theories need to be

improved before they can be combined. These theorists believe that a middle-range approach should be taken in which theories are limited to certain people and situations (Landy & Becker, 1987; Pinder, 1984). Proponents of this approach believe it allows for refinement of concepts and measures. However, no approach is necessarily exclusive of another. Certainly refinement is needed, but this does not prevent the conceptual integration of theories.

Achievement Motivation and Organizational Behavior

One of the most prominent of these middle range theories for understanding organizational behavior is achievement motivation. As originally proposed by Murray (1938) and later refined by McClelland (1951, 1961) and Atkinson (1957, 1964), achievement motivation focuses on individual needs learned in childhood which predispose individuals to behave in certain ways in certain situations. Defined as "behavior toward competition with a standard of excellence" (McClelland, Atkinson, Clark and Lowell, 1953), it can aid in understanding various phenomena. For example, individuals' need for achievement can partly explain why some individuals respond more favorably to enriched jobs than others. Individuals with a high need for achievement are more likely to respond favorably to increased job scope and responsibility because these jobs cue the achievement motive. This, in turn, will lead to higher performance, involvement, and satisfaction (Steers, Porter, & Bigley, 1996). However, those with low need for achievement could be overchallenged, experiencing frustration and exhibiting lower performance by enriched jobs.

Implicit Theories Model of Achievement Motivation

Instead of focusing on needs, contemporary achievement motivation theories focus on goals. One such approach is Dweck's Implicit Theories Model (Dweck & Leggett, 1988). This social-cognitive approach to motivation and personality links behavior patterns and disposition inferences to underlying psychological processes (Dweck, Chiu, & Hong, 1995; Dweck, Hong, & Chiu, 1993; Dweck & Leggett, 1988; Elliott & Dweck, 1988). It has been advanced and tested in achievement, social, and moral domains.

According to this research based model, individuals of equal ability may exhibit a helpless (maladaptive) or mastery-oriented (adaptive) pattern of cognition, affect, and behavior in the face of challenges, obstacles, and failure. It does not appear that these patterns are conditioned by past failure experiences, for even the brightest and most skilled individuals exhibit the maladaptive pattern (Dweck & Leggett, 1988). Instead, according to the model, these patterns develop from different goal orientations and conceptions of ability held by individuals. More specifically, "helpless individuals" have a performance goal orientation of attempting to demonstrate and validate the adequacy of their ability in a particular domain when they encounter different situations (Heyman & Dweck, 1992). "Mastery-oriented" individuals have a learning goal orientation of increasing their existing abilities and developing new skills. It is the antecedent of these goals, individuals' self-concepts or implicit theories[3] about the nature of ability that generate different concerns

[3] Implicit-explicit refers to the distinction sometimes labeled as unaware-aware, unconscious-conscious, intuitive-analytic, direct-indirect, procedural-declarative, and automatic-controlled. Implicit cognition is based on past experience, which affects performance, even though this past experience is not remembered in the usual sense in that it is unavailable to self-report or introspection (Greenwald & Banaji, 1995).

and direct them toward different goals. If ability in a particular domain is believed to be a fixed, uncontrollable entity, the performance goal of documenting that ability will be adopted. If, instead, ability is seen as a malleable, controllable quality, the learning goal of developing that ability will be adopted. Obviously this is a simple representation of the model and does not include the many moderators and mediators which have been found to impact the proposed relationships. Also, although the model identifies individual differences in beliefs, it does not explain how these implicit theories of abilities are developed.

An important feature of the model, however, is that it allows for person-situation interaction in that if there are no situational cues favoring performance or learning goals, the dispositional tendency will be exhibited. If instead the situational cues are strong, they will override the predisposition and determine implicit theories and goals. Cross-situational behavioral consistency is not expected because situational cues vary across domains and situations. Much criticism has been voiced against other psychological constructs, including attributional style and locus of control, which attempt to generalize across all domains and situations. Indeed, there is considerable empirical evidence that individuals behave differently across different types of situations (e.g., Cutrona, Russell, & Jones, 1985; Anderson, Jennings, & Arnoult, 1988). Thus, lack of cross-situational behavioral consistency because of situational cues is a strength, not a weakness, of this model as long as we can specify and measure these cues.

Another advantage of the model is that it is process oriented. Early propositions of achievement motivation were essentially content theories in that they focused on identifying needs or motives of individuals and describing how these needs or motives are

activated by environmental cues. In addition to its focus on individual motives and goals, Dweck's model incorporates psychological processes underlying behavior. Performance and learning goals "exert their differential effects on achievement behavior by activating divergent sets of motivational processes" (Elliot & Harackiewicz, 1996). This approach, therefore, is dynamic in that it focuses not only on when and why individuals behave as they do, but also on how that behavior is energized, directed and sustained.

Research conducted by Dweck and others has provided considerable empirical support for the model (e.g., Butler, 1987; Diener & Dweck, 1978, 1980; Duda & Nicholls, 1992; Elliott & Dweck, 1988; Hayamizu & Weiner, 1990; Dweck & Leggett, 1988). While this model has been tested primarily with children and adolescents in academic achievement settings, it has not been tested extensively with adults. However, studies that have tested the applicability of this model in work settings look promising. For example, Sujan, Weitz and Kumar (1994) found several statistically significant relationships between learning goal orientation and two types of successful sales behavior, "working smart" (i.e., behavior directed toward developing knowledge about sales situations and utilizing this knowledge in sales situations) and "working hard" (i.e., overall amount of effort salespeople devote to their work).

This model can be used to identify and assess the effect of different motivational patterns on important individual and organizational outcomes and to understand the influence of the work environment on individual behavior. This information has far-reaching practical implications and value for organizations in terms of employee development, training, management/leadership, work design/redesign, and performance feedback/management systems (Bobko & Colella, 1994; Farr, Hofmann, & Ringenbach,

1993; VandeWalle, 1997). For example, it can provide insight on why organizations should create environments that maximize learning and growth instead of performance when they are attempting to develop individuals. While such environments enable individuals to learn and develop, they ultimately influence performance positively at the individual, group, and organizational level.

Purpose of the Present Study

The present study examined the applicability of the Implicit Theories Model for understanding individual work behavior. It was designed to examine the psychological and behavioral consequences of individuals' goal adoption in an achievement oriented work situation. An integrative approach was taken which incorporates need-motive-value, cognitive choice, and self-regulation constructs. Specifically, the research examined antecedents of goals, implicit theories regarding decision-making skills and self-critical tendency; the relationship of these theories and goals to affect, intrinsic motivation and performance; the moderating role of perceived ability on the relationship between goals and outcomes; and the role of self-regulation as a mediator of the relationship between goals and outcomes. To examine the causal ordering of these variables, a path analysis was conducted.

Self-report measures were used to assess individual difference variables (i.e., goal orientation toward work, implicit theories about decision-making ability, self-critical tendency), self-regulatory processes (i.e., self-efficacy), affect, and intrinsic motivation. Participants engaged in a computerized business decision-making simulation in which their performance was measured.

The value of this study is that it has both theoretical and practical implications. Theoretically, it refines and expands some of the traditional conceptualizations of the model. First, a trichotomous, instead of dichotomous (i.e., learning vs. performance), conceptualization of goals was utilized. That is, the performance goal orientation was partitioned into two separate dimensions, gaining favorable judgments (prove) and avoiding unfavorable judgments (avoid). Second, self-critical tendency, the self-critical and self-defeating processing of self-relevant information, was considered as an additional antecedent of achievement goals. This framework can help explain past inconsistencies in the literature and lead to a richer understanding of achievement motivation and behavior.

On the practical side, the present study has the potential for high external validity. Because participants were adults engaged in a complex management simulation, the results can be generalized to adults in work settings. While the Implicit Theories Model is certainly applicable to individual work behavior, there has been little attempt to apply it in meaningful ways beyond educational settings. Most of the past studies have used children and adolescents in academic settings as study participants. Further, these studies have utilized meaningless tasks that have little transferability beyond the lab. Business games and simulations, used extensively in organizations and business schools, have been shown to induce real world responses and to be effective in teaching important management skills (Keys & Wolf, 1990; Teach & Gohavi, 1993).

Dissertation Outline

A review and analysis of the achievement motivation literature is provided to familiarize the reader with the classic and contemporary achievement motivation

approaches and models. The Implicit Theories Model was the primary theoretical framework for the study and this review shows that the Model is a more powerful and comprehensive approach than any of the others. The different achievement motivation theories espoused and their main tenets are highlighted briefly in Table 1. These theories and their corresponding research are reviewed more thoroughly in the next four chapters.

Subsequent chapters present the study itself, the research methods used, analyses conducted, the implications and limitations of this study and future research directions.

Table 1
Main Tenets of Classic and Contemporary Achievement Motivation Theories

Theory	Proponents	Main Tenets
Motive Approach	Atkinson (1957) McClelland (1951)	• nAch is a behavioral predisposition which influences perceptions of situations and pursuit of specific goals • nAch is implicit and is learned or acquired by early life experiences
Attributional Approach	Weiner (1985)	• Perceived causes of success and failure in achievement contexts contain properties of locus, stability, and controllability • The three dimensions affect emotional experiences • Expectancy and affect guide behavior
Goal Approach	Nicholls (1978, 1979, 1984)	• The distinguishing feature of achievement behavior is that its goal is the demonstration of competence or ability • Ability can be conceived of in at least two different ways: (1) ability as competence; and (2) ability as capacity • The different conceptions of ability serve as individuals' achievement goals • These goals can be situationally induced or assessed as individual differences • Different goals result in differences in task choice, performance, and affect • Different goals are associated with different beliefs about the causes of success
Implicit Theory Model	Dweck & Leggett (1988)	• Individuals have different implicit theories about their abilities • These theories direct the goals individuals adopt • Failure results in different patterns of behavior, cognition and affect that have different psychological and behavioral outcomes • These patterns are influenced by perceived ability • Individual predispositions interact with situational cues

Chapter 2

Motive Approach to Achievement Motivation

Need for Achievement motivation theory is a "purposive conception of motivation" (Brody, 1983, p.59) that developed from a program of research initiated by David McClelland and his associates. Dissatisfied with the available measures of human social motives, McClelland developed measures "that would permit the psychologist to ascertain the presence of a particular motive in a person" (Brody, 1983, p. 59). He initially focused on the need to achieve (nAch) and later included the need for affiliation (nAff) and the need for power (nPow). For the next 40 years, much of McClelland's research focused on measurement and the Thematic Apperception Test (TAT). However, he also focused on the sources and effects of achievement motivation. Both of these research directions are reviewed below.

Defining Needs and the Need for Achievement

Derived from his personal observations and clinical experience, Murray (1938) developed a list of 15 viscerogenic (primary needs associated with physiological functioning) and psychogenic (secondary needs associated with psychological functioning) needs that individuals learn (rather than inherit) through their interactions with the environment (Cherrigton, 1989). Both types of needs predispose an individual to behave in certain ways only if appropriate environmental conditions or incentives are present. A need will manifest itself when it is cued or activated by the environment, otherwise it will

remain latent or not activated. The psychogenic need for achievement, therefore, will only manifest and predict behavior if there are achievement incentives in the situation.

McClelland and Atkinson investigated three of Murray's needs: achievement (nAch), affiliation (nAff) and power (nPow). According to McClelland (1951, 1961, 1965), these needs are behavioral predispositions of individuals that influence their perception of situations and their pursuit of specific goals. These needs or dispositions are implicit motives of individuals learned or acquired by the kind of events experienced in one's early life (Cherrington, 1989). They are motives because they drive or energize, direct, and select behavior (Spangler, 1992). These motives are implicit because they are nonconscious and not explicitly used by individuals to describe themselves.

The most researched of these needs by McClelland and his associates is nAch. According to McClelland, achievement motivation concerns "behavior toward competition with a standard of excellence" (McClelland, et al., 1953). Further, "there are at least two kinds of achievement motivation, one of which appears to be oriented around avoiding failure and the other around the more positive goal of attaining success" (McClelland, 1951). In his mathematical formulation of nAch, Atkinson (1957) also incorporated these two separate desires to attain success and to avoid failure. As will be discussed, contemporary approaches to achievement motivation have not maintained this distinction between approach and avoidance motivation in their models (e.g., Nicholls, 1984; Dweck & Leggett, 1988).

Measuring Need for Achievement

As stated earlier, much of McClelland's research focused on developing a measure of nAch. He used the TAT, created by Murray, by analyzing the content of stories told about pictures. In the TAT, individuals are presented with sets of ambiguous pictures, instructions to be creative, and four questions to guide the individual in writing his/her story. The stories written are then coded for achievement-oriented ideas. McClelland believed that the stories individuals write to a set of pictures reflect their own dominant, but nonconscious, motives. He further believed that they are the best way to measure the strength of these motives or needs.

While most of the research on the TAT has employed white males, there is some evidence that the TAT is equally applicable for blacks and whites and that TAT scores are unaffected by racial influences (Lefkowitz & Fraser, 1980). However, there are questions about the overall reliability and validity of the TAT. Substantial criticism has been voiced against the TAT, charging that it has poor test-retest and internal consistency reliability and that it lacks validity as evidenced by its low and inconsistent correlations with actual achievement behavior (Spangler, 1992). These critics contend that questionnaire measures of nAch have better reliability and demonstrate greater predictive validity. They also argue that the lack of a correlation between the TAT and questionnaire measures is evidence of the TAT's poor convergent validity (Spangler, 1992). In responding to these criticisms, McClelland and his colleagues argue that the TAT does have adequate test-retest reliability and greater predictive validity than questionnaire measures when administered properly (McClelland, 1985; McClelland, Koestner, & Weinberger, 1989).

They have further contended that the TAT and questionnaire measures should be uncorrelated because they are measuring separate and distinct aspects of personality.

According to McClelland, questionnaire measures tap into self-attributed achievement motives (sanAch), not implicit, nonconscious motives. McClelland and his colleagues (1989, p. 690) refer to these motives or values as "normative beliefs about desirable goals and modes of conduct". They differ from nonconscious, implicit motives in that they are "conscious perceptions of what is important to the individual and of what is valued by the individual's culture" (Spangler, 1992, p. 141) and are part of an individual's self-concept. They result from the individual's understanding of environmental incentives and the demands verbalized by others (Spangler, 1992). They also differ from implicit motives in that they are related to different types of outcomes. Implicit motives predict long-term behavioral trends over time and self-attributed motives predict responses to immediate and specific situations and to choice behavior (Spangler, 1992).

McClelland and his colleagues (1989) also proposed that there are different social and activity incentives in the environment that interact with these two different motives. Social incentives are characteristics of the situation such as rewards, expectations, and norms that are outside the task itself. They may be given by a supervisor, fellow employee, co-worker, or experimenter (Spangler, 1992). Conversely, activity incentives are characteristics of the task itself and include task risk, task contingency, achievement work content, and time pressure. This distinction is important in that, according to McClelland, social incentives influence only self-attributed motives and task incentives influence only implicit motives in predicting behavior.

In a meta-analysis of 105 empirical research articles, it was found that the average correlation between TAT achievement scores and outcomes such as grade point average, sales success, and income earned was .22 (Spangler, 1992). Specifically, correlations between TAT measures and outcomes were especially positive and large for outcomes such as career success measures in the presence of task incentives (characteristics of the task itself such as task risk, task contingency, and achievement work content). In another meta-analysis of the same articles, the average correlation between questionnaire achievement measures and these same outcomes was .15 (Spangler, 1992). The correlations between questionnaire measures and outcomes were larger in the presence of external or social achievement incentives (characteristics of the situations such as rewards, demands, and norms that come from outside the task itself). Lastly, the average correlation between TAT and questionnaire measures of achievement was .09 ($p < .001$). These findings support McClelland's distinction between implicit motives and self-attributed motives, the distinction between social incentives and activity incentives, and his propositions that the TAT and questionnaire measures tap into different motives.

However, even though the results are statistically significant, when considered from the perspective of practical significance, these results are not very impressive (Spangler, 1992). The average correlation between achievement measures and outcomes range from .13 to .22. Thus, at most, 5% of the variance in outcomes is predicted by any measure of the achievement motive.

Additional Empirical Evidence of the Need for Achievement Approach

In addition to studying the role of TAT and questionnaire measures, theorists have also focused their research on the sources and effects of achievement motivation (Murray, 1938; McClelland 1951, 1961; Atkinson, 1957, 1964; Spangler, 1992). Studies have been conducted on the effects of need for achievement and performance in field and laboratory settings, achievement attributions made by individuals, the characteristics of people with a high nAch, the success of people in various careers (e.g., managers, entrepreneurs), training to increase individuals' nAch, and the relationship between individual nAch and economic growth/decline of a country. In general, these studies have provided moderate support for the theory and its various predictions. While it is beyond the scope of this review to thoroughly discuss these findings, the pertinent research as it relates to organizations is summarized below.

Need for achievement has been found to be a determinant of effort and persistence (Atkinson, 1957; McClelland, 1961). McClelland identified three important characteristics of high need for achievement individuals: (a) A strong desire to assume personal responsibility for task performance or problem solution; (b) the tendency to take risks and to set moderately high goals where the probability of success is moderate; and (c) a strong desire for performance feedback, regardless of whether they succeeded or failed. Working conditions that complement these characteristics provide high nAch individuals with the opportunity to compare their performance against a standard of excellence on a challenging task. Thus, they will perform well in these types of environments.

McClelland found that bureaucratic management and entrepreneurial business embody this type of environment (McClelland, 1961). This explains relationships found between nAch and entry into and success in business careers. For example, in one longitudinal study, it was found that bureaucratic managers and entrepreneurial businessmen had higher nAch than professionals or nonentrepreneurial men (McClelland, 1965).

Many of these studies have focused almost exclusively on men. Jenkins (1987) argues that the labor market and cultural values still constrain women's participation in these careers. So to study nAch in women, one must examine nAch congenial working conditions that are normative for women. In her longitudinal study of women, it was found that women with high nAch in college tended to pursue teaching careers (Jenkins, 1987). The author's believe that teaching, more so than other traditional female occupations such as nursing and clerical work, embodies many of the environmental characteristics described above that complement the characteristics of high nAch individuals. For example, teachers generally have autonomy in planning lessons and designing the learning environment. They also found that women who were high nAch in college also valued high status, mobility, working with people, job satisfaction, competition, and a standard of excellence.

Summary

The motive approach to achievement motivation has highlighted achievement differences in individuals and how they relate to behavior. Certainly, nAch is an important individual characteristic in the motivational process. However, it is a content theory and,

as such, does not explain the mechanism through which this behavior occurs. While nAch is still used as a variable in some studies, as will be seen in the next chapters, other achievement approaches are more dynamic and predominate the current literature.

Chapter 3

Attributional Approach to Achievement Motivation

Another trend in the literature, the role of attributions in achievement motivation, is credited predominately to Weiner (1974, 1979, 1980, 1985). Heider (1958), the first to set forth an attributional theory and a causal structure, made the distinction between internal and external causes of behavior. Later proponents of attribution theory held that individuals implicitly or explicitly ask themselves why they have succeeded or failed. According to the mastery approach, the search for causes is generated by a natural curiosity regarding the environment (Weiner, 1985). Others propose that attributions serve a more functional purpose in that they allow individuals to manage themselves and their environments by serving as guides. That is, there will be attempts to alter the causes of failure and invoke the causes of success to produce positive effects. Thus, regardless of whether attributions serve a mastery purpose, a functional purpose, or both, causal analysis clearly has adaptational value in that it helps individuals plan future actions.

Traditional attribution theory holds that ability, effort, task difficulty, and luck are the main causes to which people ascribe success and failure. Weiner (1974, 1979, 1985) proposed an attributional theory of achievement motivation and emotion in which he identified the most salient causes of success and failure in achievement contexts; analyzed the underlying structure of these causes; and described how this structure relates to emotion, motivation, and behavior. While the causes ascribed may appear to be diverse, they all can be described by three underlying dimensions: locus, stability, and controllability. All three dimensions influence emotions, but the locus dimension

determines one's expectancy for success. In turn, expectancy and affect each determine achievement behavior. The different parts of this model and the process through which they function are described below.

Weiner's Approach

According to Weiner (1974, 1979, 1985), the causes most salient in achievement contexts are ability and effort, although luck, strategy, and task characteristics are often cited. Success can be attributed to high ability and/or hard work and failure can be attributed to low ability and/or a lack of effort. Attributions of effort versus ability have different consequences for individuals (Ames, 1984; Diener & Dweck, 1978). The main reason lies in the underlying properties of causes.

The role of underlying dimensions. Many investigations have been conducted to determine the underlying structures of causal attributions. The value of this research is that it allows comparison and contrast of causes that are similar in structure even though they may appear to be vastly different. As stated earlier, Heider (1958), the first theorist to examine underlying structure, identified the locus of causes as either internal or external to the person. The locus of an individual's causal explanation refers to whether the individual believes good or bad events occur because of something about themselves (internal attribution) or because of something about the situation (external attribution). The model predicts that internal attributions for bad events will lead to a loss of self-esteem.

While this distinction helps classify causes, Wiener and his colleagues have argued that a second dimension of causality, stability, is necessary for distinguishing between

internal or external causes that are constant or endure over time and those that are subject to change or fluctuation (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971; Weiner, 1983). Thus, the stability of a causal explanation refers to whether the individual believes the event occurred because of something that will persist (stable) or something that is transient (unstable). For example, an individual may fail an exam and attribute this outcome to internal causes such as low aptitude, bad mood, or lack of effort. The outcome may also be attributed to external factors such as the difficulty of the material, distracting noises during the exam, or insufficient time for completing the exam. Difficulty of the material is a stable cause and the other two causes are unstable. Thus, attributing failure to aptitude, a constant or stable capacity, will have a different impact on affect, thoughts (including expectations for the future) and subsequent action than the variable causes of effort and mood.

Weiner (1979) later added a third dimension, controllability, to distinguish whether a cause is under volitional control or not. From the above example, an individual may perceive effort as unstable and controllable and mood and aptitude as unchangeable and uncontrollable. Thus, controllability is not solely a property of unstable internal causes, but also of stable ones. Weiner (1985) argues that this distinction is more precise than Rotter's taxonomy of locus of control, which implies that internal causes are those under one's control.

There is considerable empirical evidence for the existence of these three dimensions of causality (e.g., Meyer, 1980; Meyer, & Koelbl, 1982; Stern, 1983). All studies have identified the locus dimension of causality (internality), and most have identified the

properties of stability and controllability. These studies have also identified other dimensions of causality, but they seem to be unique to the individual studies.

Weiner (1985) considers others' suggestions that additional dimensions, including globality (Abramson, Seligman, & Teasdale, 1978), exist. Globality refers to whether the individual believes the cause of the event will influence many aspects of life (global explanation) or influence only the currently experienced event (specific explanation). Weiner contends that some causes can be perceived as specific to a certain situation, while others are perceived as pervasive in all situations (e.g., math aptitude versus general intelligence). However, the research has not yielded evidence that this should be a dimension.

Abramson and his colleagues (1978) also propose that we each have patterns of attributions or an "explanatory style", which can be best described as a cross-situational tendency to select certain causal explanations for good and bad events (Peterson, Semmel, von Baeyer, Abramson, Metalasky & Seligman, 1982). Many theorists question the validity of "explanatory style" as a trait and suggest that causal attributions are more domain specific, not cross-situational. Weiner states that perceived causality differs not only across individuals, but also within a person across situations (Weiner, 1979, 1980, 1983). He believes individuals' placement of a cause on a dimension also varies across situations, but that the underlying dimensions themselves remain constant.

The role of expectancy and value. For Weiner, an important link in understanding the relationship between causes and their underlying dimensions and subsequent behavior is expectancy and value. Specifically, Weiner contends that expectancies of success (and failure) are determined by the perceived stability of a cause. Stable causes produce

expectancies that outcomes will recur and unstable causes produce uncertainty about subsequent outcomes or a belief that different outcomes may result. Thus, Weiner proposes the following three principles: 1) if an event outcome is attributed to a stable cause, there will be an increased expectancy or certainty for that outcome in the future; 2) if an event outcome is attributed to an unstable cause, there may be no change in the expectancy of the outcome or there may be an expectancy that the future will be different; and 3) there is greater certainty that outcomes will be repeated in the future when they are attributed to stable causes than to unstable causes.

A considerable amount of research, both correlational and experimental, supports the validity of these principles (Weiner, 1985). In some of the studies, participants were induced to fail or succeed and causal attributions and future expectancies were assessed (e.g., Ronis, Hansen, & O'Leary, 1983). In other studies, causal attributions (e.g., luck, effort, ability) following outcomes were induced and expectancy for success was assessed (Fontaine, 1974; Heilman & Guzzo, 1978).

In addition, according to Weiner, these three principles explain the results obtained in level of aspiration research, which shows that aspiration increases after goal attainment and decreases if a prior aspiration has not been filled (Weiner, 1985). These experiments typically utilize skill tasks for which success and failure are generally attributed to ability (stable cause) or effort (unstable cause). When causes are attributed to ability, there is an increase in aspiration level and the expectancy and certainty of future success. When failure is attributed to low effort, the individual may plan on working harder in the future, which would result in minimal shifts in expectancies (Weiner, 1985).

The role of emotion. One can see from the research described how expectancies for success can impact behavior. However, they are not the only determinants of behavior. Another critical link in this process model of achievement is the role of emotion. According to Weiner (1985), individuals immediately experience a generally positive or negative emotional reaction following a failure or success outcome. It should be noted that this first reaction to an outcome, termed outcome dependent-attribution independent, is solely in response to the outcome and completely independent of the cause of the outcome. Individuals experience a separate emotional reaction, termed attribution dependent, in response to the perceived causal attribution, especially its underlying dimensions of locus, stability, and controllability.

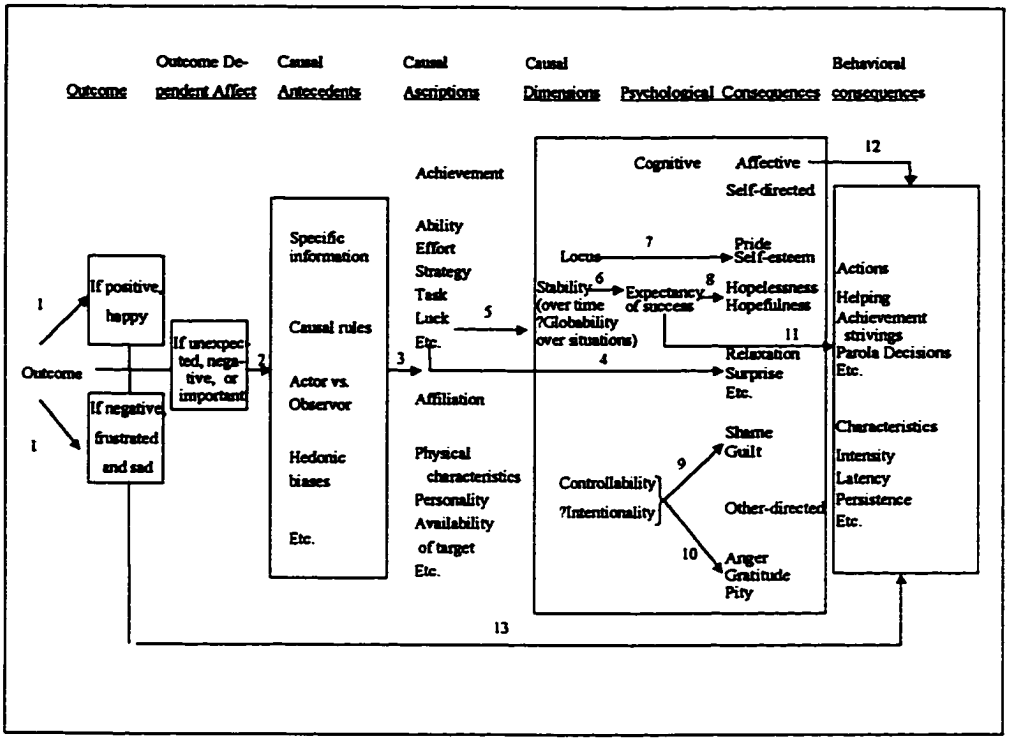
Empirical work which has focused on these outcome-dependent emotional reactions has found that happiness is related to success and that frustration and sadness are related to failure, regardless of cause (e.g., Weiner, Russell, & Lerman, 1979). However, most of the work in this area has focused on the relationship between the three causal dimensions and affect. Seven emotions appear to be most relevant: pride and self-esteem seem to be associated with the locus dimension; anger, gratitude, guilt, shame and pity are associated with the controllability dimension; and hopefulness is associated with stability (Weiner & Graham, 1984; Weiner, 1985). Weiner and Graham (1984) describe these relationships in great detail, distinguishing between actor and observer attributions. While it is beyond the scope of this review, the actor-specific findings are described briefly below since they are most relevant to the present study.

First, pride and positive self-esteem are experienced when attributing a positive outcome to the self and negative self-esteem is experienced when a negative outcome is

attributed to the self. Second, anger is related to a negative outcome whose causes are perceived to be out of one's own control but in the control of others (as opposed to external causes that are arbitrary and not under anyone's control). Third, pity is associated with outcomes attributed to uncontrollable causes. Fourth, guilt is most prevalent in situations in which the outcome is attributed to causes that are internal and controllable, whereas shame is more likely in situations where the causes are internal and uncontrollable. Fifth, gratitude to others is an emotion that is experienced when one perceives the cause is under the control of the benefactor and that the benefactor intended to benefit the person. Sixth, hopelessness is experienced when stable causes are perceived to be responsible for a negative outcome and hopefulness is experienced when stable causes are perceived to be responsible for a positive outcome.

The complete attributional model. Having reviewed the different elements of the theory and the research that supports the validity of parts of the process, the complete model can be presented. This model, presented in Figure 1, depicts a process in which a motivational episode is initiated by an outcome. Individuals' search for the cause of the outcome and the attribution (and its underlying dimensions) they make has psychological and behavioral consequences.

Figure 1. Weiner's Attributional Theory of Motivation and Emotion (Weiner, 1985, p. 565).



As revealed in Figure 1, individuals interpret an outcome as positive when a goal is attained or negative when a goal is not attained. In achievement contexts, positive outcomes are successes and negative outcomes are failures. Individuals will experience happiness in response to success, and frustration and sadness in response to failure (outcome dependent-attribution independent emotion) (Link 1). The search for the cause of the outcome then ensues (Link 2), which is influenced by several conditions such as specific information about one's past history, other's performance, and hedonistic bias (tendency to attribute success to internal factors and failure to external factors) (Link 3). In achievement situations, the causes cited are generally either ability, effort, strategy, task characteristics, or luck. These causes may elicit unique affective reactions (Link 4) and are considered in terms of their underlying dimensions of locus, stability, and controllability (Link 5). Since Weiner considers globality and intentionality to be possible dimensions, they are included in the model with question marks. Underlying dimensions have psychological consequences, including expectancy and emotion (attribution-dependent). Specifically, stability determines expectancy of future success in that domain (Link 6). Globality influences cross-situational expectancies of success. In terms of affect: locus affects pride and self-esteem (Link 7); stability influences hopefulness (Link 8); and controllability affects shame and guilt (Link 9), as well as anger, pity, and gratitude (Link 10). Expectancy and affect subsequently determine the behavioral consequence of action (Links 11, 12, and 13).

Applicability of and Limitations to Weiner's Attributional Approach

Considerable empirical support exists for the different tenets of the model. In addition to its use in achievement situations, this process model has also been applied in a variety of contexts provided that the outcome encompasses attainment or nonattainment of a goal. Weiner (1985) reports that support has been found for the applicability of the model in various contexts, including: social acceptance and rejection, alcoholism, crime, parole decisions, depression, deprivation, loneliness, need for help, maladaptive reactions to rape, smoking cessation, and wife battering.

A problem with the existing empirical evidence, however, is that each of the studies has tested different relationships within the model and none have tested all the parts of the model simultaneously. In one such study, using path analysis to analyze part of the structure, it was found that achievement motivation (in terms of nAch) directly influences performance, but that this relationship is not mediated by causal attributions (Covington & Omelich, 1979). However, it is not known whether the overall structure of the model is valid.

Another criticism that has been raised is that there is an implicit assumption underlying attribution research that all individuals aspire to the same construction of success (Nicholls, 1986). However, there may be different types of achievement motivation in which individuals have different goals. Success, therefore, will be different for each type of achievement motivation and will require different actions for its attainment. Thus, the causes of success are different and so are the associated emotions and cognitions. The theory and the resulting research are presented in the next chapter.

Chapter 4

Goal Approach to Achievement Motivation

In the late 1970s, Carol Dweck and John Nicholls introduced achievement goal approaches to achievement motivation (e.g., Diener & Dweck, 1978, 1980; Nicholls, 1978, 1979). They each emphasized goals as the reason for, or purpose of, competence-relevant activity (Elliott & Harackiewicz, 1996). Since then, this has been the predominant type of approach to studying achievement motivation.

As stated in previous chapters, early theorists incorporated approach-avoidance distinctions in their conceptualizations of achievement motivation (Atkinson, 1957; McClelland, 1951). These theorists considered the desire for success and the desire to avoid failure to be two independent and separate motivational orientations, each of which are important in determining achievement behavior. Nicholls introduced such an approach to achievement motivation that incorporates this distinction (Nicholls, 1978, 1979, 1980, 1984). In this chapter, his model and its support are reviewed.

Nicholls' Approach

In his model, Nicholls adopts an intentional view of behavior, in that behavior or action is a reflection of one's attempts to attain certain goals or incentives (Nicholls, 1979; 1984). He defines achievement behavior as behavior in which the goal is to either develop or demonstrate high ability or to avoid demonstrating low ability to self or others (Nicholls, 1979, 1984). Therefore, individuals desire success in achievement situations to

the extent that success indicates high ability and avoid failure to the extent that failure indicates low ability.

Goals. More precisely, Nicholls (1984) proposed three goals: (a) A task goal focused on competence development and task mastery (approach), (b) an ego goal focused on obtaining favorable judgments of competence (approach), and (c) an ego goal aimed at avoiding unfavorable competence judgments (avoidance). However, this approach-avoidance distinction, as originally proposed, was never developed further theoretically nor tested empirically (Elliott & Harackiewicz, 1996). Nicholls later described his ego and task orientations as two forms of approach motivation with both ego goals together (Nicholls, Patashnick, Cheung, Throrkildsen & Lauer, 1989).

Within Nicholls' achievement motivation theory, therefore, the two distinguishing features of achievement behavior are that goals are competence, and the perception of competence or perceived ability. A central element of his theory is that competence or ability can be conceptualized in at least these two different ways, which results in two forms of achievement goals, task or ego. It follows that differences in cognition, affect, task choice, and performance will vary with one's conception of ability and the subsequent goal adopted.

Conceptions of ability. According to Nicholls, young children (5-6 years old) differentiate imperfectly between ability, effort, and performance (Jagacinski & Nicholls, 1984; Nicholls, Patashnick & Mattetal, 1986). Gaining insight, learning, or mastery through effort is essentially equivalent to competence or ability. Young children believe that task mastery obtained through high effort results in greater gains in mastery and in

higher ability than task mastery obtained through low effort. He termed this belief the least differentiated conception of ability.

Nicholls argues that often the knowledge that learning has occurred is insufficient evidence of ability for adolescents and adults. "To be judged able, one must learn more than others with equivalent effort or achieve an equivalent level of performance with less effort than others" (Jagacinski & Nicholls, 1984, p. 909). Further, "a valid assessment of ability can only be obtained when optimum effort is applied and that ability limits the effect of effort on performance" (Jagacinski & Nicholls, 1984, p. 909). Nicholls termed this more differentiated conception of ability the conception of ability as capacity. It is a more objective perspective than that held by young children in that it involves the comparison of one's own effort and outcomes with those of others. This more differentiated conception of ability, which emerges between 10 and 13 years of age, limits the effect of effort on performance. The reason for this is that ability is judged relative to the ability of others in a normative reference group. Inferences of ability are based not only on the performance of others, but on the effort expended by others. According to this conception, one could learn and master a task that was personally challenging but not demonstrate high ability if one requires more time or effort compared to others, since more effort or time implies lower capacity or less ability.

Thus, both conceptions of ability hold that task mastery is achieved through effort. However, in the first and less differentiated conception, ability and task difficulty are self-referenced and judged to be high or low based on one's past performance, understanding, or knowledge. The more one learns the more competent one feels. A task is judged difficult if one expects to fail at it and so a greater gain in mastery is attained if one

masters a task that one was uncertain of being able to master (Nicholls, 1980). Because effort is seen as leading to more learning, the more effort needed for task mastery, the higher perceived ability. In the more differentiated conception, high ability indicates above average and low ability indicates below average. "Only optimum effort reveals the present limit of one's capacity and this capacity limits the effect of effort on performance" (Nicholls, 1984, p.329).

Nicholls (1978; Nicholls & Miller, 1984) also describes two intermediary levels in the increasingly differentiated conceptualization of ability. In Level 2, effort and outcome are differentiated, with effort seen as the cause of outcomes. Equal effort leads to equal outcomes. When outcome is equal, but effort is not, the outcome may be attributed to factors such as misapplied or inconsistent effort. While there is no differentiation between effort and ability at this level, in the third level we do begin to see a differentiation. However the implications of this differentiation are not followed through (Nicholls, et al., 1986). That is, children may attribute equal outcome with unequal effort to factors that imply capacity. However, they may also continue to assert that equal outcomes are attained when equal effort is expended.

According to Nicholls, individuals activate either the more or the less differentiated ability conceptions depending on one's self-set goals or motivation to achieve. These goals depend on whether an individual is task or ego involved. Task and ego involvement refer to states that are situation specific. In task involvement, an individual's goal is to improve task mastery by increasing understanding or stretching competence. Task involvement is induced by "neutral" conditions in which "learning for learning's sake" is

emphasized, tasks are perceived as moderately challenging and interesting, and/or task-extrinsic incentives are not salient.

With ego involvement, an individual's goal is to "establish the superiority of one's ability relative to that of others" (Nicholls, et al., 1989, p. 188). Here, increased understanding or skill is not an end in itself but the means through which one attains the end of establishing one's superiority. Ego involvement exists in situations where, instead of being presented in a neutral way, self-awareness is induced, there is an emphasis on interpersonal competition, and/or there is an evaluation of esteemed abilities (e.g., intelligence).

Reactions to perceived ability and goals. It follows that depending on the goals and ability conceptions employed, there will be differences in task choice, performance, and cognitive and affective reactions. First, intrinsic motivation is higher for individuals who are task involved because they are "learning to learn" and mastering a task. Second, task involved individuals make more effort attributions and there is a stronger positive relationship between perceived effort and satisfaction. Third, ego involved individuals make more ability and difficulty attributions. Fourth, for ego involved individuals, tasks that hold an intermediate level of expectancy for success are most attractive because one's highest likely level of competence can be demonstrated. Tasks that are either too easy and require no effort or that are too difficult to accomplish do not offer the opportunity to demonstrate ability.

Task choice is more complex in the ego involvement state. For individuals with high perceived ability, task choice is the same as it is in task involvement. For individuals with low perceived ability, task choice depends on whether they are certain they lack ability and

whether they are committed to demonstrating high ability or avoiding demonstrating low ability. Easy tasks, while offering individuals high expectations for success, do not offer the opportunity to demonstrate high ability. Therefore, those who are not certain that they lack ability and who want to demonstrate high ability should choose moderately difficult tasks. Others who do not have this commitment or are certain that they lack ability should choose easy or very difficult tasks. This is in keeping with Atkinson's theory (1957, 1964).

Fifth, with respect to performance, task involved individuals should perform effectively provided task difficulty levels are moderate, not extreme. Performance and effort will be lower if these individuals believe little effort is necessary or that high effort does not have an effect on mastery. This is also true for ego involved individuals who have high self-perceived ability. However, ego involved individuals with low self-perceived ability will show impaired performance. Maintenance of effort depends on whether an individual is committed to demonstrating high ability or avoiding demonstrating low ability. If one believes one's ability is somewhat low, effort will be maintained. However, if one believes one's ability is very low, one will not be committed to demonstrating high ability. Perceptions of low ability and expectations for demonstrating ability result in reduction of effort.

These different conceptions of success do not merely reflect situationally induced states of task or ego involvement, but also reflect individual differences. These differences, considered traits, are measured by questionnaires and referred to as task and ego orientation (Nicholls, et al., 1989). As noted by Nicholls, this distinction was first made by Spence and Helmreich and measured using the Work and Mastery scales and

Competitiveness Scale (Nicholls, et al., 1989). According to Nicholls, these different orientations are associated with different beliefs about the causes of success. If students are ego-oriented, they are committed to outperforming peers and would see superior ability and attempts to beat others as causes of success in school. Task-oriented students believe effort, interest and attempts to understand the material cause success. Task-extrinsic factors, such as conning the teacher or the teacher's expectations, would not lead to success for task-oriented individuals because these factors do not lead to gains in mastery. However, for ego-involved individuals, these factors would contribute to their definition of success as long as these factors help them outperform their peers (Nicholls, et al., 1989).

Nicholls describes these orientations, which represent different conceptions and criteria of success, as being more than affective tendencies (Nicholls, et al., 1989). The different goals individuals have determine the concepts they employ and the information they select and process so as to serve these goals. Because one cannot possibly attend to all the information available in situations, selecting information based on one's purpose is not seen as bias, but as a rational approach to functioning in one's social world. It follows that different achievement goals are associated with different criteria of success and different beliefs about the causes of success.

Empirical Evidence for Task and Ego Involvement and Orientation

Nicholls and colleagues have conducted several studies with high school and college students to test the validity of this model for understanding academic achievement. This research supports the value of the distinction between situationally induced states of task

and ego involvement and of the distinction between task and ego orientation. Further, task and ego involvement have been found to be related to different motivational goals, success criteria, and beliefs.

In a series of four studies, Jagacinski and Nicholls (1984) found that college students did have different conceptions of ability and that the more or less differentiated conception employed depended on how task involving or ego involving the situation was. In the first of these studies, the more differentiated conception of ability as capacity, which involves social comparison, was employed when students were asked to focus on the meaning of ability. Clearly they believed that effort can improve ability, but that learning through effort does not indicate ability. An adequate or valid assessment of ability can only be obtained when one "learns more than others with equivalent effort or achieves an equal level of performance with less effort than others" (Jagacinski & Nicholls, 1984, p. 909). The less differentiated conception of ability as competence, which is purely self-referenced, was employed when students focused on good performance due to interest and effort. Here, mastery of a task with high effort indicates greater gain in mastery than mastery with lower effort. The authors also believe this finding indicates that self-esteem and self-concept questionnaires most likely tap into self-evaluations based on the differentiated conception of ability because these questionnaires are dominated by questions about one's competence.

The other three studies focused on whether the less differentiated conception would be employed in task-involving situations and the more differentiated conception would be employed in ego-involving situations. Participants were asked to place themselves in written achievement scenarios in which both task and ego involvement and effort level

were manipulated. In all three studies, the predicted interactions were found. Higher effort was associated with higher competence in task involving, but not ego involving situations.

Questions about affect were also included in these studies. It was found that positive affect, including greater pride and a sense of accomplishment, were associated with higher effort in task involving situations, but with lower effort in ego involving situations. Negative affect, including greater guilt and embarrassment were associated with high effort in ego involving situations and low effort in task involving situations.

Similar results were obtained in studies whose purpose was to find support for the distinction between task and ego orientations as individual differences (Nicholls, 1989 reported in Nicholls, et al., 1989). In a study using four samples of 9th and 12th grade students, scales were developed to assess motivational orientation or academic goals (i.e., understanding, hard work, superiority, avoid inferiority, easy superiority, work avoidance - wherein the goal is to avoid work or do as little as possible; and academic alienation - wherein the goal is to goof off, beat the system, and put one over on the teacher) and beliefs about the causes of success in school (i.e., interest and effort, ability, and luck - considered standard causes in attribution theory, such as pretending to like the teacher, dressing and behaving nicely, the teacher expecting to one to do well, competitiveness, and peer-cooperation). Clear task and ego orientation factors emerged when beliefs and goals were factor analyzed together. Beliefs that academic success is caused by effort, interest, attempts to understand, or cooperation loaded on the task orientation factor. The motivational orientation of superiority, avoid inferiority, work avoidance, and academic

alienation and the beliefs that competitiveness, impressing the teacher, and other extrinsic strategies cause success loaded on the ego orientation factor.

Nicholls also found that ego orientation is significantly related to public self-consciousness about ability, but that task orientation is not (Nicholls, et al., 1989). This finding makes intuitive sense because ego oriented individuals are explicitly concerned about their ability relative to the ability of others. One's evaluation of oneself therefore necessitates comparison of one's ability with other's ability. Nicholls argues that this finding lends additional evidence for the distinction between task and ego involvement.

Similar to studies of ego and task involvement, Nicholls, et al. (1989) found that goal orientation predicts task choice, effort deployment, and persistence among students. Ego oriented individuals were more likely to prefer tasks that are extremely easy or extremely difficult, particularly when perceived ability was low. With both types of tasks, competence is not validly assessed and so "success would not clearly indicate superior ability and failure would not clearly indicate inferior ability" (Nicholls, et al., 1989, p. 199). Further, ego involved individuals will reduce effort or lack persistence when they believe they will perform worse on a task than others. The reason for this is that failure indicates low ability. So then, when ego oriented students were told that the majority of individuals could do well at an impossible task, they were less persistent than when they were told that few students could do well at the task. An opposite pattern was found for students who were task oriented. They were more persistent when a task was presented as one that was easy for most students than when it was presented as one that was hard.

It was also found that task oriented individuals spent more time in an activity when there were no "exogenous pressures to do so" (Nicholls, et al., 1989, p. 200) than did ego

oriented individuals. The reason for this is that skill development or task mastery is the ultimate goal for task oriented individuals and so they are more likely to use free time for this purpose. Related to this, it has been found that ego oriented individuals also preferred learning strategies that engender more understanding even if they require more effort (Nolen, 1988). Kroll (as cited in Nicholls, et al., 1989) also found that task orientation was positively related and ego orientation was negatively related to tolerance for ambiguity, thoughtfulness, and open-mindedness.

Interestingly, researchers have not found that the relationships described above are mediated by perceived ability (Nicholls, et al., 1989). This is in direct contrast with studies which have found that perceived ability is moderately related to intrinsic motivation among elementary school students (Harter, 1981; Harter & Connell, 1984). Nicholls' explanation for this discrepancy is that high scores on Harter's intrinsic motivation scale are obtained if students indicate they prefer difficult tasks (Nicholls & Miller, 1984). Further, most elementary school students define difficult tasks as those tasks that require high ability and which most people cannot do. He argues that task oriented students prefer personal challenge that is better measured by effortful accomplishment and not by difficult tasks.

Another program of research conducted by Nicholls and his colleagues is the relationship between personal goals (i.e., achievement motivation orientation) and beliefs about the purposes of education, beliefs about the causes of academic success, and satisfaction with school learning. In a study of high school students, Nicholls, Patashnick and Nolen (1985) found that task orientation, which includes personal goals of learning, understanding and keeping oneself busy, was associated with the beliefs that school should

increase social responsibility, understanding of the world, and achievement motivation. This orientation was also moderately related to attributions for school success of working hard, working collaboratively, being interested, and trying to understand. Work avoidance or academic alienation, which includes the personal goals of avoiding work, doing well without effort, and escaping teacher constraints was positively related to the belief that schooling's purpose is to help students obtain wealth and status. These personal goals were also related to attributions for school success of luck and nonintellectual factors unrelated to quality of one's work, which includes trying to beat others and having teachers think you will do well. They were weakly related to beliefs in the roles of interest, effort, working collaboratively, and understanding material instead of memorizing. Ego orientation was similar to work avoidance in that it was related to the nonintellectual factors describe above. However, it was also related to effort, interest, understanding and working collaboratively. With respect to satisfaction with school learning, correlations were negative with Work Avoidance, positive with Task Orientation, and close to zero with Ego Orientation.

Recent research on task and ego involvement and orientation. The earliest research conducted by Nicholls and his colleagues focused almost exclusively on gathering evidence for the different conceptions of ability and on the existence of ego and task involvement and orientation. Later research focused on the correlates, causes, and consequences of these achievement orientations. Further, early studies applied and tested this theory with students in academic achievement situations. Recent research has extended beyond this narrow application.

One study was conducted to determine whether children's conceptions of intelligence are structurally similar to conceptions of ability (Nicholls, et al., 1986). Specifically, the researchers were interested in whether children have increasingly differentiated conceptions of intelligence as they mature. The authors state that intelligence testing requires maximum effort and scores are deemed high or low relative to the scores of others. Thus, intelligence tests per se presume the differentiated conception of ability as capacity in that capacity limits the effect of effort on test performance and performance relative to others (Nicholls, et al., 1986).

Using a sample of 143 children aged 6-18, three increasingly differentiated conceptions of verbal and abstract intelligence were identified by presenting children with a series of four photographs of two different children working on the same puzzle task (Nicholls, et al., 1986). One child was depicted as working on the task in all four photos. The other child was shown working in two of the photos and playing with objects, instead of attending to the task, in the other two. The children were told that the children in the photos had received the same score. The children were then asked a series of questions designed to distinguish between the four levels of differentiation of ability and effort. The authors found that these differentiated conceptions were positively related to age. In the first level, intelligence is evaluated in terms of the difficulty of different intellectual skills with no reference to the inherent properties of these skills (i.e., verbal vs. abstract reasoning). In the second level, children believe that the development of intelligence involves effortful learning or the acquisition of information. Verbal and abstract intelligence are not seen as inherently different in that both require effort and can be developed. Further, neither skill is perceived to be a better indicator of overall

intelligence. In level three, children make a clear distinction between information acquisition through memory (verbal reasoning) and problem-solving skill (abstract reasoning). This distinction resembles Piaget's formal operations and adult conceptions of fluid (abstract, nonverbal reasoning and problem-solving skills) and crystallized intelligence (mainly verbal skills such as vocabulary and verbal comprehension).

These conceptions of intelligence parallel conceptions of ability. However, it seems that the most differentiated conception of intelligence emerges at a later age than does the most differentiated conception of ability (i.e., 14-18 vs. 10-13, respectively). Nicholls and his colleagues (1986) contend that this is because an understanding of intelligence requires an understanding of both performance on tests (conception of ability) and the acquisition of intellectual skills.

The value of this research lies in its applicability to educational settings. Conceptions of intelligence clearly influence the preferences, choices, decisions and judgments of teachers and students. For example, some high school teachers may emphasize verbal and memorization skills and this may conflict with a mature student's preference for problem solving and abstract reasoning. Thus, an understanding of individuals' conceptions of intelligence and age differences in beliefs has implications for the curriculum content and testing practices used in primary and secondary education.

Some research has investigated whether Nicholls' ego and task oriented approach to achievement motivation is also relevant in sport settings (Duda, 1989; Duda & Nicholls, 1992) and whether there are relationships among goal orientations, perceptions of ability, and intrinsic satisfaction. Some congruence between orientations in sport and academic achievement was expected. Specifically, goal orientations and beliefs about the causes of

success were believed to generalize across sports and academics, but that perceived ability and satisfaction would tend to be more domain specific.

It was found that this approach is relevant to sports settings (Duda, 1989). Using a goal orientation scale for sport based on the Motivational Orientation Scale (Nicholls, et al., 1989), four goals emerged: ego orientation, task orientation, work avoidance and cooperation. Beliefs about the causes of success, similar to those found for academic settings, grouped into four dimensions: deception, motivation/effort, ability, and external factors. The results also showed that goal orientation and beliefs about the causes of success generalized across both domains (Duda & Nicholls, 1992). As expected, there was slight generality across domains for perceived ability and no generality for task satisfaction, suggesting that they are more domain specific.

Recently Nicholls applied a goal approach to understanding social relations (Jarvinen & Nicholls, 1995). The purpose of the study was to ascertain adolescents' social goals, which the researchers defined as preferences for different types of peer social interactions, including those they find satisfying and those they prefer to avoid. They also measured beliefs about the causes of success in peer relationships (i.e., success was defined as friendship and getting along with others). A Social Goals Questionnaire was developed based on the goals Murray identified as most relevant to social relations. It was found that adolescents pursue six goals in their relationships with peers: intimacy, nurturance, dominance, leadership, popularity, and avoidance. Six causes of social success were also identified: being sincere, having status, being responsible, pretending to care, entertaining others, and being tough. Conceptually related goals and beliefs did not converge in an overall factor analysis. However, the goals of intimacy and nurturance

were related to the belief that sincerity and consideration of one's feelings lead to successful peer relationships. Further, satisfaction with peer relationships was positively associated with prosaic goals (intimacy and nurturance) and beliefs (being sincere).

Limitations of the Goal Approach

As illustrated, Nicholls and colleagues have made a significant contribution to the achievement motivation literature. Their approach has yielded considerable evidence supporting the distinction between different goals individuals adopt in achievement settings and the effect of goal adoption on affect, cognition and behavior. Performance, learning, intrinsic motivation, creativity, self-efficacy, and success and failure attributions are all impacted.

However, there are several limitations to this theory and the related research. First, while Nicholls and colleagues assert that achievement goal adoption can be either situationally induced or determined by individual differences in orientation, they have not dealt theoretically or empirically with how the situation and the person interact. Do situational cues override dispositional orientations or are there interaction effects?

Second, while the theory, as originally proposed, distinguishes between approach and avoidance motivations, avoidance was abandoned. However, several researchers have argued for an achievement goal trichotomy, comprised of a mastery goal and two performance goals, one aimed at demonstrating competence and the other at avoiding incompetence (Bergen & Dweck, 1989; Elliot & Harackiwicz, 1996; Henderson & Dweck, 1990). Elliot & Harackiwicz (1996) argue that this more complex framework affords more theoretical and empirical precision, leading to more accurate predictions and

a better understanding of study results. These researchers found, for example, that only performance goals accompanied by avoidance of failure, not judgments of competence (approach), undermined intrinsic motivation.

Third, this approach has not been used to investigate failure situations. It seems that a natural extension of the research utilizing this approach is to predict individuals' conceptions of failure and their cognitive, affective and behavioral reactions to failure. Jagacinski and Nicholls (1990) conducted one study in which they looked at whether students intentionally reduce effort when they expect a failure that will indicate their incompetence. This is considered a protective mechanism in that the failure can be attributed to low effort and not low ability. Students were presented with a written scenario in which an individual gets stuck while taking an IQ test and were asked to indicate what they and others would do. They did not indicate they would not work hard but they believed others would reduce effort. The authors' explanation for this is that an individual's intentional reduction of effort implies that the individual believes and accepts that one is incompetent. That is, an individual takes a defensive action so that one's incompetence will not be revealed. This action, therefore, is inconsistent with a goal of establishing that one is competent. While there is probably some validity to this argument, this could be studied more precisely by using the goal approach and incorporating mediating and moderating variables such as goal orientation and perceived ability.

In the next chapter, a more comprehensive goal approach to motivation is presented. This model, while similar to Nicholl's theory, has several strengths and advantages.

Chapter 5

The Implicit Theories Model

The Theory as Originally Proposed

Dweck's Implicit Theories Model purports to be a comprehensive social-cognitive model of motivation and personality (Dweck & Leggett, 1988). As an approach to motivation, the model focuses on goals and goal oriented behavior. As an approach to personality, it identifies individual differences in beliefs and values that appear to determine individual differences in behavior. Its approach is social-cognitive in that it identifies specific intra-psychic mediators of behavior and assigns a central role to the interpretive and self-regulatory processes that generate affect and mediate behavior (Dweck, et al., 1993; Dweck & Leggett, 1988). Thus, the emphasis is on cognitive mediation, or the way in which situations are construed and interpreted, and the way in which information about the situation is processed.

The Implicit Theories Model is research-based and developed from a series of studies which documented and described the behavior of children with equal ability in achievement situations (e.g., Diener & Dweck, 1978, 1980; Dweck, 1975; Dweck & Bush, 1976; Dweck & Elliott, 1983; Dweck, Goetz & Strauss, 1980; Dweck, Davidson, Nelson, & Enna, 1978; Elliott & Dweck, 1988). This program of research identified different patterns of achievement behavior under obstacles or failure conditions. The researchers classified the patterns, helpless and mastery-oriented, as maladaptive and adaptive, respectively. They found that at the onset of failure or obstacles, four outcomes were exhibited by individuals with the helpless pattern: negative self-cognitions, negative

affect, task irrelevant verbalizations, and decrements in performance. The helpless response was characterized by challenge avoidance, low persistence in the face of failure or obstacles, deterioration in performance, and negative affect and self-cognitions. The mastery-oriented response was characterized by challenge seeking, persistence in the face of obstacles or failures; enjoyment in the exertion of effort in pursuit of task mastery; and maintenance of, or improvement in, performance. Further, the helpless children in the experiments reacted as though they had received an indication of their ability and the mastery-oriented children reacted as though they had been given useful feedback about learning and mastery.

These data led the researchers to question why individuals of equal ability and performance exhibit such different patterns of behavior, affect, and cognition when they encounter obstacles, challenge, or failure (Dweck & Leggett, 1988). Prior research had attributed deterioration of performance following failure to learned helplessness, the belief that one is unable to overcome failure (Abramson, et al., 1978). This belief is associated with attributions of failure to stable, uncontrollable factors such as ability rather than to controllable factors such as effort. Further, studies have consistently found sex differences, with girls more likely to display learned helplessness and attribute failure to stable, uncontrollable factors (Dweck & Bush, 1976; Dweck, et al., 1978; Dweck, et al., 1980; Dweck & Elliott, 1983). Dweck and colleagues believed that in addition to differences in attributions, there may also be differences in beliefs, achievement related cognitions, and behaviors important in mediating responses to failure (Diener & Dweck, 1978, 1980).

They proposed that goals are the central determinants of achievement patterns (Elliott & Dweck, 1988). That is, the different goals individuals pursue in achievement situations set up these helpless and mastery-oriented patterns by creating a framework within which events are interpreted (Dweck & Leggett, 1988; Elliott & Dweck, 1988). Helpless individuals pursue performance goals in which they seek documentation of their ability and mastery-oriented individuals pursue learning goals in which they seek improvement in their competence. These goals, therefore, create the framework within which individuals construe, interpret, and process information about the situation that subsequently determines affect, behavior, and cognition.

Individuals who pursue performance goals are concerned with the measurement of their ability and favorable judgments of their competence. They avoid negative judgments by proving, validating, or documenting their ability. Thus, when these individuals are faced with failure situations, they perceive the failure as validation that their ability level is low. Their attribution for failure, therefore, is low ability. Because ability refers to one's aptitude or capacity, not a specific behavior, it is not something that can be changed about oneself. This person-centered, instead of behavior-centered, orientation has negative effects. Clearly, this orientation is detrimental, especially for the individual who already has low self-efficacy and/or self-esteem beliefs. It is considered to be maladaptive, since individuals with this orientation view ability as a fixed, stable entity that cannot be improved.

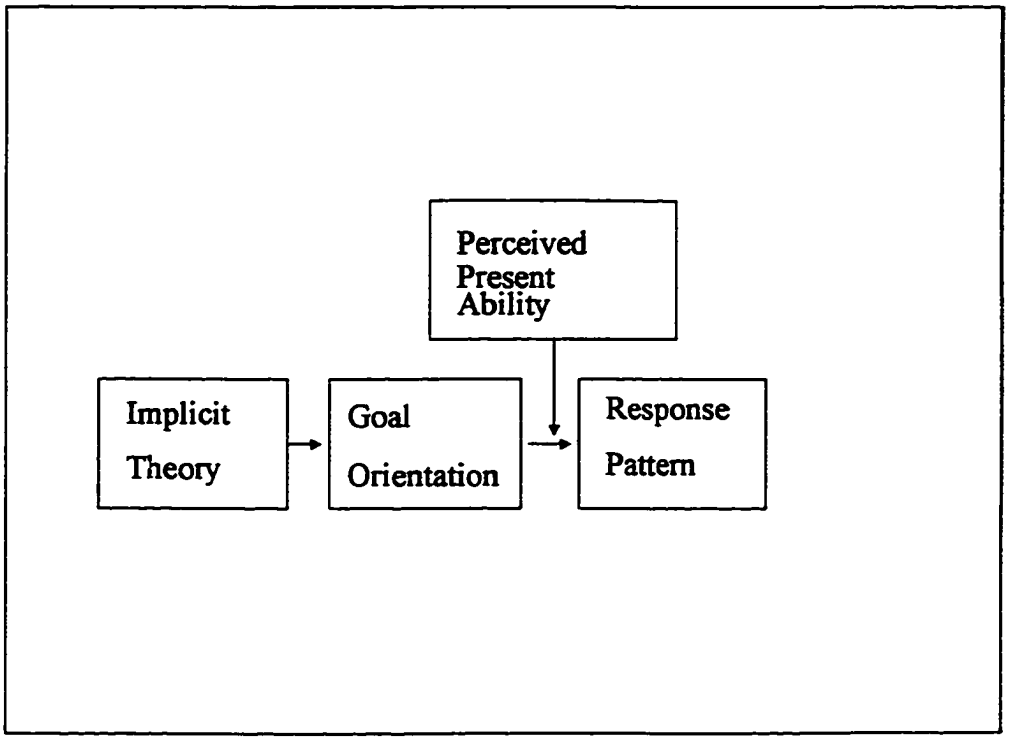
In contrast, individuals who pursue learning goals are concerned with increasing their competence or ability and/or mastering new tasks. For these individuals, failure situations provide information on how to best acquire a skill or master a task. This

orientation leads individuals to change their behavior by either altering the strategies employed or increasing the effort expended. The attribution for failure, therefore, is lack of effort or ineffective strategies. This orientation is considered adaptive in that these behaviors can be modified.

This conceptualization of goals led researchers to question why individuals pursue different goals in achievement situations (Dweck & Leggett, 1988). They proposed that individuals have different self-concepts or implicit theories about themselves (entity or incremental) that generate different concerns and that direct individuals toward different goals (Dweck & Leggett, 1988). Ability or intelligence can be conceptualized as a fixed, uncontrollable entity or a malleable, controllable quality. If intelligence or ability is conceived as a fixed, uncontrollable entity, the performance goal of documenting that entity will be adopted. If, instead, intelligence or ability is seen as a malleable, controllable quality, the learning goal of developing that ability will be adopted.

This description of the Implicit Theories Model provides a succinct summary of the model's major components and the ensuing patterns. In the review below, the various components of this model, its correlates, and its outcomes, are reviewed more extensively along with the existing empirical evidence. Finally, new research directions and applications of the Model are presented. To aid in this review, the components and relationships within the Model are depicted in Figure 2.

Figure 2. Implicit Theories Model.



Theoretical roots of implicit theories. At the core of the theoretical model presented by Dweck and her colleagues are implicit beliefs or theories. These theories, which are core assumptions about the world, create a framework for people's inferences, judgments and reactions (Dweck, et al., 1995; Dweck & Elliott, 1983). The role of implicit theories in influencing human behavior has long been accepted in the social psychological literature (e.g., Carey & Smith, 1993; Greenwald & Banaji, 1995). In fact, Dweck's theoretical roots can be found in Kelley's (1967) theory of personality and Heider's (1944, 1958) theory of social perception. According to Kelley, people hold personal constructs or naïve assumptions about the self and social reality which guide the way information about the self and other people is processed and understood. Similarly, Heider believes that people have latent theories of personality which influence the way the self and other people are perceived.

According to Dweck, individuals who believe that a certain attribute is a fixed, unchangeable entity hold an entity theory of that attribute. In contrast, individuals who believe that the attribute is a malleable, controllable quality that can be shaped, developed or increased through specific actions hold an incremental theory of that attribute. For example, people who subscribe to an entity theory of morality believe that a person's moral character is something very basic about his or her personality and that a person's moral traits (e.g., conscientiousness, honesty, responsibility) cannot be changed very much (Dweck, et al., 1995). By comparison, people who support an incremental theory of morality believe that a person may become more moral through his or her own efforts or strategy.

Unlike theories such as locus of control, however, individuals' implicit theories are believed to be domain-specific theories instead of generalized theories of the world (Dweck, et al., 1995). While some individuals do have one general theory of human attributes, many have implicit theories of different attributes that are each independent of one another. That is, one's implicit theory in one domain is specific to that domain and predicts cognition and behavior related to that domain but it does not generalize to another domain. For example, one may have an entity theory of morality, while also having an incremental theory of personality.

It is also important to point out that in reading and evaluating these orientations, there may be a temptation to interpret the incremental trait orientation as a more desirable one. However, Dweck and her colleagues view these theories as different ways in which individuals construct their reality, with each having specific advantages and disadvantages that lead to different coping styles and important behavioral and cognitive consequences

(Dweck, et al., 1995). Individuals with an entity theory have a relatively parsimonious and stable reality since traits are perceived as static and easily predict future behavior. However, this theory also may lead mistakenly to global dispositional inferences and a helpless pattern of coping. In contrast, an incremental theory "offers a more complex, but less knowable reality" (Dweck, et al., 1995, p. 269). That is, because of the possibilities for change reality can never be known without any conclusiveness.

The role of goals. According to the model, individuals' different self-concepts or implicit theories generate different concerns and direct individuals toward different goals (Dweck & Leggett, 1988). For example, if intelligence or ability is conceived of as an uncontrollable entity, the model predicts that the performance goal of documenting that entity will be adopted. If, instead, intelligence or ability is seen as a malleable, controllable quality, the model predicts that the learning goal of developing that ability will be adopted. Since goals are key to the theory, it is necessary to clarify the construct of goals in the psychological literature and their role in the Model.

Goals are, arguably, the most basic and critical element in motivation. The achievement of any personal objective depends on the selection of a path or goal, its maintenance, change, and/or termination of action. According to Karoly (1993), goals are the "quintessential psychological construct-symbolic structures with presumptive causal significance" (1993, p. 27). Further, goals and goal-setting are perhaps the most researched and best understood components of motivation and self-regulation (Karoly, 1993). According to Locke and Latham (1990), goals are defined in terms of performance standards and, "to predict performance, one must focus upon task-specific goal content (specificity, difficulty, complexity, and goal conflict) and goal intensity (factors influencing

task engagement or commitment, such as expectancy and self-efficacy)" (Karoly, 1993, p.31). This emphasis on goal properties has yielded extensive and consistent findings in the literature (e.g., specific, difficult goals yield higher performance than vague "do your best" or easy goals). However, Dweck and her colleagues have instead identified superordinate classes of goals (VandeWalle, 1997) and focused on the impact of goal types (learning vs. performance) on outcomes such as learning, interest, effort and performance (e.g., Dweck, 1986; Elliott & Dweck, 1988).

In their early model proposition, Dweck and her colleagues (Dweck & Elliott, 1983) followed the lead of McClelland (1951) and Atkinson (1957) and identified three achievement goals: a learning goal whose focus is task mastery and skill development (approach), a performance goal whose focus is attaining favorable judgments of competence (approach), and a performance goal whose focus is avoiding unfavorable judgments of competence (avoidance). Dweck later integrated the two performance components together into one performance goal (Dweck, 1986).

Individuals' goal adoption reflects their goal orientation or individual differences in goal preferences. Although Dweck conceptualizes goal orientation as an underlying personality variable, it is influenced by the environment and can be altered. Thus, Dweck takes an interactionist approach to goals. That is, an individual brings to the situation a predisposition toward one of the two goals. In the absence of situational cues, this dispositional tendency will prevail. If, however, the situation has strong cues for one of the goals, the dispositional tendency will be overridden and the situation will prevail (Dweck & Leggett, 1988).

Whether the goal adopted is situationally induced or represents an individual's dispositional tendency or orientation, each goal will generate different concerns and create its own framework for processing incoming information (Elliott & Dweck, 1988). An individual pursuing a performance goal may be most concerned about the adequacy of his or her ability. Goal choice and goal pursuit will focus on this concern. A failure situation may, therefore, be perceived as providing information that one has no ability or has low ability. In contrast an individual pursuing a learning goal is probably most concerned with how to best acquire or enhance a skill and master a task. Goal choice and goal pursuit will focus on progress and mastery through effort. Effort is the instrumental factor in goal achievement and accomplishment and the factor which engenders pride and satisfaction (Dweck, 1986). In a failure situation, therefore, this individual may look for information on how to best alter his or her strategies and effort.

Goal orientation appears to be independent of individuals' actual ability level (Dweck, 1986; Dweck & Leggett, 1988). Individuals' perceived present ability or confidence in present ability is, however, relevant only for performance goals and not learning goals (Dweck & Leggett, 1988; Elliott & Dweck, 1988). Specifically, individuals who hold a performance goal and perceive their ability to be high will exhibit a mastery oriented behavior pattern of challenge seeking and high persistence. However, if a performance goal is held and one's perceived present ability is low, the helpless behavior pattern of challenge avoidance and low persistence will be exhibited in the face of obstacles. The reason for this is that if one's goal is to gain positive judgments of ability, then one must be confident that one's ability is high before exhibiting it for judgment. If one has little confidence in one's ability, then one will seek to conceal one's "true" ability

by avoiding negative evaluation. This will best be accomplished by easy tasks for which success is certain or very difficult ones that do not necessarily indicate low ability. In contrast, individuals who hold a learning goal will exhibit the mastery behavior pattern of challenge seeking and high persistence regardless of whether they believe their ability is high or low. In fact, the perception that one's ability is low may even provide an additional reason to pursue the goal of increasing one's ability.

Cognitive, affective and behavioral components of response patterns. Thus, the goals individuals pursue in achievement situations determine their response patterns (Dweck & Leggett, 1988; Elliott & Dweck, 1988). Individuals pursuing a performance goal exhibit the maladaptive "helpless" pattern in which they avoid challenge, use ineffective strategies, show low persistence, make low ability attributions for failure, experience negative affect and show impaired performance. This response pattern is maladaptive in that it demonstrates a "failure to establish reasonable, valued goals, to maintain effective striving toward those goals, or, ultimately, to attain valued goals that are potentially within one's reach" (Dweck, 1986, p. 1040). Most long-term valued pursuits (e.g., work or career) will present obstacles and failures at some point. Such a response pattern will obviously be personally limiting (Dweck & Leggett, 1988).

In contrast, individuals pursuing a learning goal exhibit the adaptive mastery response in which they seek challenge; formulate effective strategies; show high persistence; make effort and strategy attributions for failure; experience positive affect; and maintain, or even improve, performance. This response is adaptive in that it "promotes the establishment, maintenance, and attainment of personally challenging and personally valued achievement goals" (Dweck, 1986, p. 1040). This type of response

pattern in periods of difficulty will, therefore, result in maximizing attainments (Dweck & Leggett, 1988).

Empirical Evidence

Support for the Model as originally proposed. As stated earlier, this model is research-based in that it was developed from observed patterns of behavior exhibited by children in reaction to failure. As such, Dweck and others have found a considerable amount of support for the original formulation of the model and its propositions. Many of the studies have also found support for the moderating impact of sex, self-efficacy, and performance feedback. While task performance has been the traditional outcome assessed, some studies have focused on learning. Other studies have attempted to extend the model to nonacademic contexts, such as decision-making and sales performance, and to social domains. Some of the main patterns and findings are described in more detail below.

The existence of the maladaptive helpless pattern and the more adaptive mastery pattern of behavior in children has been well-documented (Diener & Dweck, 1978, 1980; Dweck, 1975; Elliott & Dweck, 1988; Licht & Dweck, 1984). In countless studies, helpless children focused on their ability and its adequacy and perceived challenges as threats to self-esteem. These children also exhibited decrements in performance, negative self-cognitions (i.e., failure attributable to personal inadequacies in intelligence, memory, or problem-solving ability), negative affect (e.g., boredom, anxiety), and task-irrelevant verbalizations (i.e., in an attempt to divert attention from present performance to more successful endeavors or attractive attributes). In contrast, mastery-oriented individuals

focused on strategy and effort and saw challenges as learning opportunities. These children did not offer attributions for failure, indicated positive affect and optimism, maintained or even improved performance, and exhibited positive self-instructions and self-monitoring.

Researchers have found the helpless pattern as early as five and six years of age (Bempechat, London & Dweck, 1991; Heyman, Dweck, & Cain, 1992). However, because children this age probably do not have the differentiated conception of ability as a capacity distinct from effort, implicit theories of "goodness", not implicit theories of intelligence, were assessed. There is evidence that suggests that children's conceptions about traits begins very broadly and gradually becomes narrower and more differentiated. While "intelligence may not be thought of in a motivationally relevant way" (Heyman, et al., 1992, p. 402), 'right' and 'wrong' and 'good' and 'bad' are broad conceptions children are familiar with from a very early age. Thus, achievement situations may be providing information to young children about their goodness and badness. It was found that children who exhibited the helpless reaction to failure did indeed endorse stable and global beliefs about goodness (Heyman, et al., 1992). Therefore, young children may be using information in achievement situations to make inferences about how good or bad they are.

It has consistently been found that these beliefs or implicit theories about the malleability of traits affect both the nature and frequency of dispositional inferences (Dweck, et al., 1993; Dweck & Leggett, 1988; Erdley & Dweck, 1993; Heyman, et al., 1992). That is, an entity belief consistently predicts dispositional inferences for outcomes, whereas an incremental belief emphasizes specific mediators of behavior (e.g., processes

or strategies) or its outcomes. Thus, individuals who believe that personal attributes are fixed traits emphasize traits in understanding behavior. Individuals who believe that personal attributes are malleable qualities will not emphasize traits, but instead focus on specific mediators such as goals, needs, emotions, and states of mind that lead to actions (Dweck, et al. 1993). For example, if one holds an entity theory of intelligence and fails an aptitude test, one will blame his/her intelligence, a fixed entity, for the failure. An incremental theorist would instead focus on specific factors that may have caused the failure, such as test taking strategy or time pressure. Benenson and Dweck (1986) found that the use of trait explanations for self references about one's academic performance emerged as early as kindergarten.

Self references about intelligence in achievement situations have been one of the most researched areas. Individuals who hold entity views of intelligence focus concern on one's ability and the documentation of its adequacy (Bandura & Dweck, 1985, cited in Dweck & Leggett, 1988; Dweck & Leggett, 1988) and are more likely to make negative dispositional attributions following failure (Bempechat, et al., 1991; Heyman, et al., 1992). In addition, the direct causal relationship between implicit theories of intelligence and goal choice has been supported by numerous studies (Bandura & Dweck, 1985, cited in Dweck & Leggett, 1988; Bempechat, et al., 1991; Clark & Tollefson, 1991; Dweck & Bempechat, 1983; Elliott & Dweck, 1988). These studies show that children who have an incremental theory of intelligence as a malleable or increasable quality, whether it is a dispositional orientation or situationally induced, are more likely to adopt learning goals than those who are oriented toward an entity theory of intelligence as a fixed trait (Bandura & Dweck, 1985; Elliott & Dweck, 1988).

It has also been well established that the goals pursued by individuals determine these reactions (Bempechat, et al., 1991; Dweck & Elliott, 1983; Elliott & Dweck, 1988). Here too, this pattern of the helpless response resulting from performance goals and the mastery response resulting from learning goals is found regardless of whether the goal is a dispositional orientation or situationally induced. Differences in achievement goals were found as young as 4 and 5 years of age (Smiley & Dweck,1994). In addition, the role of perceived ability as a moderator of the relationship between goals and behavior patterns has also been well established (Ames, 1984; Diener & Dweck, 1978, 1980; Elliott & Dweck, 1988). Children's assessment of their present ability was irrelevant when learning was emphasized. They chose the challenging learning task and displayed a mastery-oriented pattern of behavior. When performance was emphasized, the pattern exhibited was highly dependent on perceived ability. High ability individuals chose challenging tasks that would allow for judgments of competence. Low ability individuals chose easier tasks with which they would avoid judgments of incompetence.

One of the most documented findings has been a sex difference in reaction to failure situations, mainly as a result of failure attributions. That is, girls are more likely to attribute failure to low ability and not to motivational factors (effort and strategy) and to subsequently exhibit a helpless response in the face of failure (Dweck & Bush, 1976; Dweck, et al., 1978; Dweck & Gilliard, 1975; Dweck, et al., 1980; Licht & Dweck, 1984). In contrast, boys often showed improved performance, increased persistence, and challenge seeking. In one study, it seems that failure led girls to believe that they lacked general ability, not just ability related to the specific task on which they failed (Dweck, et al., 1980).

Dweck and her colleagues (1978) attribute the observed sex differences partly to the manner in which positive and negative feedback is given differentially to girls and boys in the classroom. Although boys receive more negative feedback than do girls in the early grades, the feedback is not evaluative of their abilities. It tends to focus on effort, conduct, and neatness. Instead, girls' feedback implies that their failures are indicative of their (lack of) ability. Thus, boys' negative feedback focuses on their motivation and girls' feedback focuses on their ability.

Licht and Dweck (1984) studied the impact of these sex differences on sex differences in academic achievement (i.e., math vs. verbal). Specifically, they focused on the interaction of goal orientation and subject matter differences. They predicted that the learning challenge of a confusing (e.g., mathematics) is comprised of difficult concepts and requires frequent shifts in mastering new skills (e.g., mathematics). This may be debilitating to a helpless oriented child, but not a mastery oriented child. In contrast, material that does not have these same kinds of demands (e.g., verbal achievement) would not be debilitating and both children would be expected to perform equally well. In their study, Licht and Dweck simulated these subject matter differences and the expected predictions were supported. They believe this finding indicates that the differential patterns found in girls and boys may help explain why males perform better at mathematical problem solving and girls perform better on tests of verbal achievement.

While these early studies have good research designs and consistent findings, the generalizability of the results is questionable because of the sample characteristics and task content. In these studies, participants were exclusively children, ranging from kindergarten to late grade-school age. The tasks utilized in these studies, which include

concept formation, pattern recognition, anagrams, and the Tower of Hanoi, are largely irrelevant and meaningless to research participants.

Other populations and consequences and the role of self-regulatory processes. More recent studies have tested the model with college students and found further support for the model (Bergin, 1995; Hayamizu & Weiner, 1990; Koestner & Zuckerman, 1994; Miller, Behrens, Greene, & DeNewman, 1993; Wood & Bandura, 1989). Many of these studies have focused on other psychological and behavioral consequences, as well as the self-regulatory processes that generate these outcomes.

Bergin (1995) found that, while there was no difference in learning strategies, participants in a mastery situation had higher achievement, greater intrinsic motivation, and more task interest than did students in the failure condition. In Koestner and Zuckerman's (1994) study, participants were assigned to a goal condition (performance vs. learning) and an outcome condition (success vs. failure) and their performance on a word-maze puzzle was assessed. Participants in the failure and performance goal condition showed the least persistence and the lowest performance of the four groups. Koestner and Zuckerman did not, however, find that perceived ability had an impact on either outcome.

In their study of students in an introductory statistics course, Miller et al. (1993) found that goal orientation influenced the self-regulatory activities of goal-setting and self-monitoring and task-appropriate cognitive strategies. While the patterns were consistent with some theoretical predictions, the data did not find support for the predicted interaction of perceived ability and goal orientation.

In both of the studies above, the lack of an interaction may be because of the way in which perceived ability was operationalized. Also, both studies lacked statistical power because of the small sample sizes. The results of these studies do not, however, imply that Dweck's theory is flawed. They do illustrate a need for more precise definitions and operationalization of constructs.

Hayamizu and Weiner (1990) tested the relationship between implicit theories of ability and goal orientation. They developed a questionnaire to assess goal orientation among students with respect to studying habits. Interestingly, factor analysis showed one learning and two performance goal tendencies. Learning in order to gain competence represents the learning goal tendency as conceptualized by Dweck (1986). The tendency for students to learn in order to gain approval and to avoid rejection from teachers and parents (interpersonally oriented reasons for learning) and the tendency for students to learn because they desire good grades and advancement (trying to improve actual achievement) represent two performance goals. They also tested the theory incorporating Weiner's attributional principles of locus, stability and controllability. It was found that perceived stability of low ability was negatively related to learning goal orientation. Also, effort and task difficulty were good predictors of achievement goals.

Wood and Bandura (1989) tested the hypothesis that experimentally induced incremental or entity conceptions of ability would impact self-regulatory mechanisms (i.e., self-efficacy and self-set goals), which would, in turn, influence analytic strategies employed, task choice, and performance. That is, they believed that failure or low achievement would have different diagnostic information depending on whether one's task ability is believed to be a malleable, increasable quality or a fixed trait or entity. More

specifically, incremental theorists' self-efficacy would not be affected adversely because these individuals view errors as a natural part of the learning process and not as indicators of low ability. However, entity theorists' errors are indicative of competence level and, thus, would lower self-efficacy. Perceived self-efficacy is salient in that it has a direct effect on performance and a mediating influence on goal setting and task strategies.

In the Wood and Bandura (1989) study, participants served as managerial decision-makers in a computer-simulated organization in which they matched employees to jobs and applied managerial rules to achieve a difficult organizational performance goal. It was found that entity subjects experienced lowered self-efficacy, chose easier goals, utilized less efficient strategies, and exhibited decrements in performance. In a path analysis, the authors showed that self-efficacy and self-set goals had both a direct effect on performance and an indirect effect, through their influence on analytic strategies employed.

Sujan, et al. (1994) conducted a study of 190 salespeople in which they assessed the impact of individuals' goal orientation on working hard (effort) and working smart (developing knowledge of sales situations and behaviors for later use) on sales performance. The learning goal orientation influenced both types of sales behaviors, while the performance orientation influenced only working hard. Although both sales behaviors increased sales performance, working hard had a greater impact. Further, positive and negative supervisory performance feedback increased learning orientation, while only negative feedback increased performance orientation. Additionally, self-efficacy played a moderating role in the relationship between goal orientation and work strategies. Specifically, a performance orientation had an impact on working smart and working hard

for high self-efficacy individuals. Similar to findings in the achievement domain, low efficacy individuals reacted helplessly. Lastly, it was found that a learning orientation had an influence only on working hard for low self-efficacy individuals. An explanation offered by the authors for this finding is that high self-efficacy individuals believe they can increase their competence thorough working smart only. On the other hand, low self-efficacy individuals believe they need both the working hard and working smart strategies.

The two studies above both found support for the impact of self-efficacy performance. However, Sujan, et al. (1994) treated self-efficacy as a moderator variable and Wood and Bandura (1989) treat it as a mediator variable. While one could argue for either formulation, it is more appropriate to conceptualize self-efficacy as a mediator in the Implicit Theories Model. Although self-efficacy is not part of Dweck's theory, Dweck did not postulate that goal orientation per se determines performance. Rather, the goals adopted set up a framework for interpreting and responding to events and sets in motion cognitive and affective processes that promote the mastery or helpless behavior pattern (Dweck & Leggett, 1988). Self-efficacy represents a self-regulatory process that can help explain how goals influence behaviors such as goal choice, persistence, and performance. It appears that Sujan and his colleagues' interpretation, application and analysis of self-efficacy is more similar to Dweck's conceptualization of perceived ability (beliefs about one's level of ability). Self-efficacy differs from perceived ability in that self-efficacy is more task focused. Further, self-efficacy is broader in that it refers to one's capability in mobilizing whatever is need to meet situational demands. Theoretically, one could have high perceived ability, but not have high self-efficacy in certain situations.

The treatment of self-efficacy as both a mediator and moderator variable illustrates the moderator-mediator "problem" often encountered in psychology. The distinction between moderator and mediator variables is often misunderstood and the two terms are sometimes used interchangeably (Baron & Kenny, 1986). The difference is that "moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur" (Baron & Kenny, 1986, p. 1176). Thus, mediation is a more dynamic, process-oriented approach to how third variables function.

Moderators, on the other hand, change the causal relation between two variables. More specifically, moderators may be thought of as third variables that categorize an independent variable into subgroups to establish the maximum effectiveness of the independent variable on the dependent variable. In general, moderator variables affect the direction and/or strength of the relation between the independent or predictor variable and the dependent or criterion variable and can be used in correlational and analysis of variance (ANOVA) frameworks. Within a correlational framework, moderator effects occur when the strength of the correlation changes significantly or where the direction of the correlation changes. Within an ANOVA framework, moderator effects are represented by an interaction between an independent variable and a factor that specifies the appropriate conditions within which they impact the dependent variable.

Mediator variables are third variables that represent the mechanism through which the independent variable impacts the dependent variable. They may explain how external events take on psychological significance (Baron & Kenny, 1986). In general, mediators account for the relation between the predictor variable and the criterion variable. To analyze mediation effects, regression analysis is most appropriate. Mediation is

established if an otherwise significant independent variable has no association with the dependent variable when the mediator is controlled.

Further, Baron and Kenny (1986) state that moderator variables are generally introduced when there is a weak or inconsistent relation between a predictor and criterion variable (e.g., a relation may hold in one setting but not another or for one subpopulation but not another). A mediator is best introduced when there is a strong relation between the predictor and the criterion. In this case, self-efficacy appears to be conceptualized best as a mediator.

The mastery pattern of achievement motivation has also been shown to be related to intrinsic goals and interests (Heyman & Dweck, 1992). Intrinsic motivation is generally defined as "the motivation to engage in work primarily for its own sake, because the work itself is interesting, engaging, or in some way satisfying" (Amabile, Hill, Hennessey, & Tighe, 1994, p. 950). In contrast, extrinsic motivation is reflective of "the motivation to work primarily in response to something apart from the work itself, such as reward or recognition or the dictates of other people" (Amabile, et al., 1994, p. 950).

Several studies have shown that the learning goals individuals adopt in achievement situations predict intrinsic motivation, which is defined as task enjoyment and interest (Benware & Deci, 1984; Boggiano & Barret, 1985; Butler, 1987; Meece, Bloomfield, & Hoyle, 1988). Butler, for example, manipulated achievement goals in a divergent thinking task with fifth- and sixth-grade children by varying feedback conditions: 1) ego-involving with normative grades or performance praise; 2) task-involving with comments designed to encourage and guide learning; and 3) neutral with no feedback. Although the groups were initially equal in intrinsic interest for the task, the task-involving feedback group

reported the greatest intrinsic motivation, as measured by interest and enjoyment in the task and the desire to work on additional tasks that were similar.

The Benware and Deci study (1984) was interesting in that they manipulated goals by presenting students with material to learn for the purpose of either taking an exam or teaching the material to another student. The exam condition clearly implied a performance goal since the focus was on the judgment of ability. The teach condition implied a learning goal in that the focus was on skill development and mastery. Participants were asked to rate how interesting the material was, how enjoyable they found the experiment, and the amount of additional time they were willing to volunteer for the experiment. The teach condition group had statistically significantly higher scores on all three of these intrinsic motivation measures.

Elliot and Harackiewicz also studied the impact of goals on intrinsic motivation, but they found that achievement orientation moderated the relationship (Elliot & Harackiewicz, 1994, 1996). Specifically, while performance goals undermined the intrinsic motivation of low achievement orientation individuals, they enhanced intrinsic motivation for high achievement orientation individuals. Low achievement orientation individuals were intrinsically motivated when they were given learning goals. While this study seems to contradict previous research, the finding is partly described by a subsequent study.

Elliot and Harackiewicz (1996) further divided the concept of goals to attain better predictive utility of goals. Specifically, in keeping with the classic approach to achievement motivation, they divided the performance goal into performance-approach (demonstration of competence) and performance-avoidance (avoiding the demonstration

of incompetence). In a manipulation of the three goal conditions (mastery, performance-approach, performance-avoidance) they found that intrinsic motivation was enhanced in the mastery and performance-approach conditions. However, intrinsic motivation was undermined by the performance-avoidance goal.

In summary, it has been shown that the major tenets of the Implicit Theories Model are supported by research. Recent studies have expanded the model by including different moderator and mediator variables that impact psychological and behavioral consequences. The research also suggests that some motivation and control theories may be similar and complimentary.

Comparison of the Model to Other Psychological Constructs and Theories

While the Implicit Theories Model in its entirety is unique, it is related to other psychological constructs and motivation theories and approaches. In this section, the Implicit Theories Model is compared to, and contrasted with, several of these models and approaches. It is shown that the Model is similar to and compatible with each of these, yet it is different in terms of its components and processes.

Learned helplessness/attributional style. Most notably, the model's roots are in Abramson, et al.'s (1978) reformulated learned helplessness model which holds that individuals' attributional style determines their characteristic reaction to negative events. A helpless response is exhibited by individuals who attribute negative events to stable, global and internal factors. The Implicit Theories model was developed from the patterns of affect, cognition, and behavior observed in children during experiments on learned helplessness. While the learned helplessness model focuses on attributions given in

reaction to events, the Implicit Theories Model "begins earlier in the psychological chain" (Dweck & Leggett, 1988, p. 268) and focuses on the underlying processes that give rise to attributes and attributional style. That is, individuals' implicit theories establish the framework within which individuals process information about events and make attributions about these events.

In addition, the learned helplessness model holds that the helpless response is learned over time when individuals have repeatedly experienced failure situations over which they have had little control. According to the Implicit Theories Model, helplessness is exhibited in failure situations, but is not the result of one's failure experiences. Instead, it is the result of individual differences in implicit theories (entity) and goal orientation (performance) or the situational cues favoring an entity theory and performance goal.

Locus of control. In a similar vein, the Implicit Theories Model is related to locus of control. Locus of control differs from the attributional approach in that it focuses on the controllability of events or outcomes, not attributions. The model differs from locus of control in that it focuses on the perception of control of the underlying attributes that determine outcomes. Thus, the model "begins earlier in the psychological chain" (Dweck & Leggett, 1988, p. 268).

Intrinsic and Extrinsic Motivation. As shown earlier, goals influence intrinsic motivation, when defined as task interest and task enjoyment. However, an analysis of intrinsic motivation measures (e.g., Harter, 1981; Amabile, 1985) suggests that this dependent-independent variable relationship can also be viewed in terms of "learning goals and mastery-oriented motivation actually being a part of what is meant by intrinsic motivation in a broader sense" (Heyman & Dweck, 1992, p. 242). For example, Harter's

much used self-report scale of classroom learning (in elementary school children) measures five dimensions of learning that can be characterized as having an intrinsic and extrinsic pole: (a) Challenge - Preference for Challenge versus Preference for Easy Work; (b) Curiosity - Curiosity/Interest versus Pleasing the Teacher/Getting Good Grades; (c) Mastery - Independent Mastery versus Dependence on the Teacher; (d) Judgment - Independent Judgment versus Reliance on the Teacher's Judgment; and (e) Criteria - Internal versus External Criteria for Success/Failure. This measure, which contains 30 pairs of statements, asks students to choose the statement in each pair which best describes them. Some of the items tap into a learning versus performance goal orientation. For example, "Some kids ask questions in class because they want to learn new things" (Curiosity - Intrinsic) versus "Other kids ask questions because they want the teacher to notice them" (Curiosity – Extrinsic). Other items appear to tap into achievement patterns. For example, "Some kids like to go on to new work that's at a more difficult level," (Challenge - Intrinsic) versus "Other kids would rather stick to the assignments that are pretty easy to do" (Challenge - Extrinsic) and "Other kids keep trying to figure out the problem on their own" (Mastery - Intrinsic) versus "When some kids get stuck on a problem they ask the teacher for help" (Mastery – Extrinsic).

More recently, the Work Preference Inventory (WPI) was developed to assess individual differences in self-perceptions of college students and working adults of the extent to which they are intrinsically or extrinsically motivated toward what they do (Amabile, et al., 1994). This 30-item scale is divided into two primary scales of Intrinsic and Extrinsic Motivation and subdivided into four secondary scales: two intrinsic factors of Challenge and Enjoyment; and two extrinsic factors of Compensation and Outward

(recognition and the dictates of others). Here too, some items tap into goal orientation. For example, "I'm concerned about how other people are going to react to my ideas" (Outward) and "As long as I can do what I enjoy, I'm not that concerned about exactly what grades or awards I can earn or what I'm paid" (Compensation). Others tap into achievement orientation. For example, "The more difficult the problem, the more I enjoy solving it" (Challenge) and "I want my work to provide me with opportunities for increasing my knowledge and skills" (Challenge).

While goals have been shown to predict intrinsic motivation, it is plausible that intrinsic and extrinsic motivation can be used to predict goals and achievement patterns. While achievement goals and patterns can be conceptualized as part of what is meant by intrinsic and extrinsic motivation, some intrinsic/extrinsic motivation factors (e.g., enjoyment, interest) may add to our understanding of achievement motivation.

Deci and Ryan's Causality Orientations Theory. The Implicit Theories Model is also conceptually similar to Deci and Ryan's (1985) causality orientations theory. According to this theory there are individual differences in people's understanding of the nature of causation of behavior, which can be categorized into three classes: autonomous, control-determined, and impersonal. The autonomy orientation involves a high degree of choice in initiating and regulating behavior. Individuals with this orientation tend to be aware of their needs and goals. Control-determined behaviors are initiated and regulated by controls in the environment (e.g., external rewards or external dictates as to how one should behave). Individuals oriented toward control seek out, select, and interpret events in their lives as controlling. Impersonal behaviors are behaviors whose initiation and regulation are perceived to be beyond a person's intentional control. Individuals with this

orientation are described as helpless, in that they believe they cannot control their behavior and so cannot obtain the outcome they desire.

Koestner and Zuckerman (1994) state that the two theories are similar in that they identify individuals who may exhibit a maladaptive or helpless response to failure (i.e., performance orientation and impersonal orientation). They also both identify individuals who are motivated by intrinsic interest or self-determined factors (i.e., learning and autonomous). Lastly, they describe people who are motivated by proving their competence and who are more extrinsically motivated (i.e., performance and controlled). In their study, these researchers found that autonomous college students were more likely to adopt learning goals and that both controlled and impersonal students were more likely to adopt performance goals and impersonal goals.

While the two theories are similar, Dweck's theory is more advanced theoretically and empirically in that it describes the processes through which these orientations impact behavior, affect and cognition. It also identifies implicit theories as the antecedent of goal orientation.

Weiner's Attributional Approach. Dweck's Implicit Theories Model is also related to Weiner's (1974) attributional approach to achievement motivation. They both posit that personal attributes and other factors are either controllable or uncontrollable. However, while Weiner views factors as inherently uncontrollable or controllable, Dweck holds that attributes are not inherently controllable or uncontrollable. Instead, almost any attribute can be perceived as controllable or uncontrollable, depending on one's implicit theory. For example, an incremental theorist who attributes failure to ability may believe that ability can be increased over time through effort and learning. According to Weiner,

ability attributions are always stable and uncontrollable. It is often believed that perception is one's reality and one's reality will most likely guide behavior.

Nicholls' Goal Approach. The Implicit Theories Model is a goal approach to achievement motivation similar to Nicholls' theory (1978, 1979, 1980, 1984) in that it holds that achievement motivation is relevant in situations where competence is salient. Both theories also propose that there are two goals individuals pursue in these situations (i.e., performance or ego, and learning or task) and that the goals adopted have a differential impact on cognition, affect and behavior. Also according to both, these goals may be either situationally induced or the result of individual differences in one's orientation. Dweck further describes how the situation and the person interact. However, Nicholls and Dweck differ in their conceptions of the antecedents of these goals. While Nicholls holds that individuals' goals stem from the different conceptualizations of success that they have, Dweck maintains that they are associated with individuals' implicit theories of abilities. Dweck's theory is also more comprehensive in terms of its basic components and the role of self-regulatory processes.

McClelland's Motive Approach. The Model can also be seen as related to McClelland's motive approach if one views McClelland's needs or motives as classes of goals (Dweck & Leggett, 1988). According to Dweck and Leggett (1988), they are "internal motives whose strength determines the vigor with which these classes of goals are pursued" (p. 262). However, instead of focusing on the strength of these goals, Dweck and colleagues focus on the purposes of these goals. These theorists suggest that, like perception, these more specific goals are closer to behavior.

New Theoretical and Research Directions

The Implicit Theories Model was set forth to explain observed patterns of cognition, affect, and behavior in response to individuals' failures in achievement situations. While much of the research conducted has focused on children and learning, Dweck and others have shown that it is possible to generalize these patterns to children and adults in other types of achievement situations, including the social domain (Dweck & Leggett, 1988). Further, implicit theories may exist for one's physical skills, attractiveness, intelligence, and morality. In addition, these implicit theories can be held about things outside oneself to other people, places, things, and the world in general. While the present study focuses on self-references, other directions are reviewed so as to present a complete picture of the Implicit Theories Model.

Self-inferences beyond intelligence. While self-inferences about intelligence and their relation to goals and dispositional inferences has been well established, recent research has attempted to generalize the model to other domains. Erdley, Dumas-Hines, Loomis, Cain, Olshefsky, and Dweck (cited in Erdley & Dweck, 1993) assessed implicit theories about personality (malleable quality vs. fixed entity) to predict responses to social rejection. In this study, children were classified as incremental theorists or entity theorists and asked to write a sample letter to a pen pal acceptance committee evaluator to try out for a pen pal club. After receiving a minor setback in which they were told that the evaluator was unsure of their admittance, children were asked about their attributions for the setback. Entity theorists were more likely to cite deficits in their general social ability as the reason for the setback.

Bempechat, et al. (1991) examined the development of children's implicit theories of three other attributes in addition to intelligence: sociability, physical skills, and physical appearance. In their study of children from kindergarten through fifth grade, it was found that children did hold incremental or entity theories for each of these four attributes. Further, younger children were more likely to hold a generalized view of these attributes. Older children tended to endorse different theories for different attributes.

In a study of kindergarteners through fourth graders, Benenson and Dweck (1986) found that trait explanations for outcomes in the social domain emerged as early as kindergarten age. In fact, trait explanations emerged earlier for social outcomes than for academic outcomes. The researchers' explanation for this finding is that children experience social outcomes before they experience formal schooling and so their understanding of social outcomes precedes their understanding of academic outcomes.

Inferences beyond the self. Dweck and others have also recently questioned the applicability of the model to the social-moral domain and judgment of others (Bempechat, et al., 1991; Dweck, et al., 1993; Dweck, et al., 1995). Evidence suggests that implicit theories about others' attributes are associated with the inferences made about others' personality and morality and others' social behavior and outcomes. In particular, it is proposed that individuals who believe others' personality and moral character are fixed are more likely to make global dispositional inferences about others. Individuals with malleable theories about others' attributes are more likely to make specific and situation-dependent inferences (e.g., goals, needs, emotions, state of mind).

In the first study of these inferences, Erdley and Dweck (1993) predicted that individuals have either an incremental or entity theory about others' personalities and that

their implicit theories influence their judgments of others. Specifically, they proposed that because entity theorists believe personality is fixed, they are more judgmental of others. Accordingly, these individuals should be more rigid (i.e., predict less change over time and would be less likely to revise their judgments in light of new information) and global (i.e., focusing on the person and not the acts) in their judgments. In their study of fourth and fifth graders, participants viewed a slide of a new boy in school exhibiting negative behaviors (cheating, lying, and taking someone else's materials in an effort to make a good impression on classmates). They found that entity theorists made more generalized and global evaluations of the boy. These children were more likely to believe that the behaviors exhibited were diagnostic of certain inflexible traits (even when given evidence to the contrary). They also showed less empathy towards the boy and recommended more punishment. The authors posit that these findings suggest that entity theorists view behavior as indicators of underlying traits and that these traits are indicative of global, enduring qualities. Incremental theorists may instead use traits as labels or descriptors of others' behaviors.

Another study showed that entity theorists are more likely to make trait inferences about others' morality, even when the behavior depicted is unintentional (Chiu, Parker, Hong, & Dweck, 1994, cited in Dweck, et al., 1995). In one condition, participants were presented with the description of a scene in which a person accidentally drops a book from a second floor window and almost hits someone. Entity theorists were more likely to make inferences about the person's character than were incremental theorists.

Researchers have also questioned whether entity theorists, in making trait judgments of others, are likely to view their judgment as permanent (Dweck, et al., 1995). Also, do

entity theorists believe that a person who has displayed a trait-related behavior will show cross-situational consistency in the future? Erdley and Dweck (1993) addressed these questions in the research described above. When asked to indicate how they thought the boy would behave in the short-term and long-term future, incremental theorists stated that the boy would act differently in time when he had settled in and was no longer "the new kid on the block". However, entity theorists thought the boy would remain the same and continue to be a troublemaker in the future.

In the study by Chiu et al. (1994, cited in Dweck, et al., 1995), college students were presented with descriptions of how people behaved in one situation and asked to predict how they would behave in a new and different situation. They found that entity theorists believed that the target person would remain the same even in a novel situation. Incremental theorists focused on the situation and indicated that a behavior exhibited in one situation is not diagnostic or predictive of behavior in another situation.

Summary and Conclusions

The Implicit Theories Model links patterns of affect, cognition and behavior to individual differences in implicit beliefs or theories and goal orientations, underlying psychological processes, and situational influences. Its inclusiveness and complexity has implications for many theoretical issues in personality and motivation (Dweck & Leggett, 1988). It also has practical implications for different populations in different domains, including nonacademic and nonachievement. Further, it can be generalized beyond the self to explain social perception and behavior.

A key aspect of the model is that it allows for a person-situation interaction. Although goal orientation and response patterns are considered individual differences, they are also situation specific and alterable. Thus, it is not a purely state or trait view of motivation. According to the Model, if there are no situational cues favoring performance or learning goals, the dispositional tendency will be exhibited (Dweck & Leggett, 1988). If the situational cues are strong, the predisposition can be overridden. In addition to influencing the goals adopted, situational cues can also impact implicit theories and self-efficacy. Because situational cues vary across situations, cross-situational behavioral consistency is not expected. The main criticism voiced against other constructs, such as attributional style and locus of control, is that they attempt to generalize across situations. Critics argue that these constructs are not stable personality traits, but patterns of behavior adopted in response to specific situations and in specific domains (Cutrona, et al., 1985; Anderson, et al., 1988). In fact, considerable research supports this criticism. Also, the ability to alter dispositional tendencies is encouraging in that one can alter maladaptive patterns to more adaptive ones.

While the Implicit Theories Model in its entirety is unique, it is related to other psychological constructs and motivation theories and approaches as reviewed above. However, it has advantages over many other approaches in that instead of simply providing a static explanation of behavior and reactions to events, it describes the underlying processes that serve to generate and regulate behavior. The value of the model lies in its applicability to these different theories and constructs. As such, it links several lines of research and represents a more comprehensive motivational approach with greater

explanatory power, predictive ability, and applicability to different behaviors and situations.

Current research in the area is promising and exciting in that it addresses the "when, how, and why" of achievement motivation. The trichotomous framework of goals does seem to be more precise and to have better explanatory and predictive power (Elliott & Harackiewicz, 1996; VandeWalle, 1997). The identification and path analysis of self-regulatory processes helps explain how goals, theories/beliefs, cognition, affect, behavior, and performance are interrelated. Lastly, the use of different populations in nonacademic settings working on meaningful tasks helps identify dispositional and situational variables and how they moderate these relationships.

With these current directions in the literature, the Implicit Theories Model is a potentially powerful framework for explaining differences in employee behavior. Certainly employees display adaptive or maladaptive behaviors when they experience various work situations including development and training, performance feedback, different management styles, and work design/redesign. For example, individuals who hold an incremental theory and adopt learning goals would likely seek and welcome performance feedback because they view it as an opportunity to learn, to grow, and, ultimately, to improve their performance. Conversely, individuals who hold an entity theory presumably adopt performance goals and would likely view performance feedback as potentially threatening. That is, negative feedback might indicate to them that they do not have the skill or ability required to do the job.

In addition, the model's power also lies in its ability to incorporate the influence of the work environment on individual behavior. Although one's goal orientation and the

implicit theories held are individual differences, they can be influenced and altered through environmental cues. Thus, in this same example, whether the performance feedback is presented as information that can be used to develop oneself or as information about one's capabilities, it will have an impact on cognition, affect, and behavior.

In this chapter self-regulatory processes have been discussed solely in terms of how they function within the Implicit Theories Model. In the following chapter the concept of self-regulation of behavior and its various processes are more thoroughly reviewed to provide the reader with a better understanding of how they function.

Chapter 6

Self-Regulation

Many would argue that psychology has been in the midst of a cognitive revolution in that cognitive concepts and processes are used to provide powerful explanations of psychological phenomena. The growing interest in self-regulatory constructs and models reflects this revolution. Social-cognitive theory, for example, explains behavior in terms of triadic reciprocal determinants in which behavior, cognitions, and other personal and environmental events influence each other bidirectionally. These cognitive determinants are primarily represented by self-regulatory processes.

Voluntary action management, or the self-regulation of intra-personal behavior, concerns how the person, as opposed to the environment, controls and directs his or her own actions. It has become increasingly recognized that individuals' thoughts, feelings, and beliefs about themselves and their environments are some of the most important regulators of behavior (Markus & Wurf, 1987). The following definition of self-regulation, offered by Karoly, provides a good summary (1993, p. 25):

> Self-regulation refers to those processes, internal and/or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts). Regulation implies modulation of thought, affect, behavior or attention via deliberate or automated use of specific mechanisms and supportive metaskills. The processes of self-regulation are initiated when routinized activity is impeded or when goal-directedness is otherwise made salient (e.g., the appearance of a challenge, the failure of habitual action patterns, etc.). Self-

> regulation may be said to encompass up to five interrelated and iterative component phases: 1. Goal selection, 2. Goal cognition, 3. Directional maintenance, 4. Directional change or reprioritization, and 5. Goal termination. They are related to, but conceptually distinct from beliefs, attributions, preferences concerning freedom of choice or desirability of control, general intellectual capabilities, and biochemical or neurophysiological systems of internal state regulation (homeostasis).

Thus, self-regulatory models involve cognitive, emotional, social, and volitional subprocesses (Bagozzi, 1992). These include goal or standard setting; self-monitoring; the activation and use of standards; discrepancy detection, self-evaluative judgment, and self-consequation; discrepancy reduction; self-efficacy; metaskills; and boundary conditions (Karoly, 1993). These theories can be categorized as either addressing preparation for action through goal selection and schematic organization (phases 1 and 2 of the process) or goal pursuit through performance monitoring and evaluation (phases 3, 4 and 5) (Karoly, 1993).

However, while each model differs in the elements emphasized, the configuration of components, and the phase of the self-regulation sequence or cycle represented, they all have a multi-element, closed loop, mediational perspective on human self-guidance. As stated by Karoly (1993 p. 30):

> All presume that on-line regulation is a dynamic process, continuous and holistic rather than linear, built upon the operation of feedback (knowledge of results) and feedforward (standard-produced disequilibrium), sensitivity to action-produced environmental changes, the accessibility of goal representations, and a capacity for the selective mobilization of energy, attention, and relational judgment. The output

of any regulatory process is dependent upon the uptake of information and its relatively unconstrained flow within the person and between the person and his/her social world. Goals exist within such a framework as reference values or standards of comparison.

In the following sections, the self-regulatory process is described in terms of phases and isolated subfunctions. Some of these represent models and theories and they are described in detail to reflect their complexity or the extent of research supporting their validity. Because this summary is intended to be a clarification of what self-regulation is and how it operates rather than an exhaustive review, the models are simplified. Finally, the organizational applications of self-regulatory processes are presented.

Self-Regulatory Processes

Goal-setting. Goal setting models hold that task-specific goal content (specificity, difficulty, complexity, and conflict) and goal intensity predict task engagement, commitment, and performance. Perhaps the most widely applied and best understood model in industrial-organizational psychology is Locke and Latham's (1990) goal setting theory. According to this theory, goals impact job and task performance by directing attention or effort, sustaining performance over time, and stimulating strategic planning (Karoly, 1993). These effects are moderated by several factors including goal attributes (e.g., specificity, challenge), goal commitment (e.g., trust, supportiveness), input sources (e.g., previous performance level, external constraints), and support elements (e.g., ability, knowledge, feedback availability) (Latham & Locke, 1991). The goal-setting literature is vast and complex. While some relationships are well established (i.e., specific, challenging

goals to which one is committed lead to better performance than vague, easy, 'do your best' goals), other relationships are not (i.e., proximal goals lead to greater persistence and higher performance than distal goals) (See Tubbs, 1986 for a comprehensive review).

Most of the goal-setting research focuses on goal-setting as a managerial technique for influencing worker motivation and subsequent performance. However, self-regulation theorists purport that three factors determine individuals' self-set goal choice: expectations; affective factors such as needs, motives, or values; and desired self-conceptions derived from one's personal and social history (Markus & Wurf, 1987). As found with other self-set goal research, there is disagreement on whether proximal or distal goals produce higher performance. While this is an important question, it is clearly beyond the scope of this review. For the present purposes, suffice it to say that goals are important in self-regulation in that they serve to influence goal selection and goal cognition.

Self-Monitoring. Utilization of information is an important part of the open systems view of self-regulation. In this phase of the self-regulatory process, individuals attend to various aspects of their internal states and to their behavior or performance (Markus & Warf, 1987). Monitoring behavior and/or performance pertains to attending to and perceiving information that bears upon one's goals. It can include the monitoring of specific behavior elicited, environmental influences on behavior, the rate at which a goal is being attained, and affective consequences. Thus, self-monitoring determinants may include response failure, sudden environmental change, social prompts, moods, self-conceptions, values and self-attentional proclivities (Karoly, 1993). Consequences of self-monitoring include enhancement or inhibition of motivation. Thus, self-monitoring is an

important phase which allows individuals to maintain or change goal direction (phases 3 and 4).

Standards. Goal choice and direction and the monitoring of goal attainment are necessary, but not sufficient, in triggering the self-regulation of thought, affect, and behavior. In the next phase, "observed behavior that is monitored is then judged against a criterion that is derived from one's own standards or the standards of significant others" (Markus & Warf, 1987, p. 311). Defined this way, a standard can establish a target or performance goal and serve a controlling function. Carver and Scheier (1981) state that when a person is focused on him/herself there is a tendency to compare his or her state to a behavioral standard. This encourages self-regulation in that it encourages discrepancy detection and, subsequently, discrepancy reduction and self-evaluative judgment.

Discrepancy detection and reduction, and self-evaluative judgment. In the next step of self-regulation, individuals reward or punish themselves through approval, disapproval, or tangible awards (Markus & Warf, 1987). Having compared oneself to a standard, individuals attempt to reduce any perceived discrepancy between how one is behaving and how one wants to behave (Carver & Scheier, 1981). Cognitive-behavioral actions found to be effective in correcting this mismatch include attentional resource allocation, effort mobilization, planning and problem solving, verbal self-cueing, facilitive cognitive sets or expectations, stimulus control or milieu selection, and mental control/thought suppression. Self-evaluative reactions to standards include satisfaction and pride, which lead to self-reward, punishment and recruitment of effort and energy (Karoly, 1993).

An important component of this model is the role of moderator variables. Discrepancy detection and reduction and self-evaluative judgment are not automatic processes but are contingent on levels of self-efficacy, standard setting (self-set versus other-set), degree of mismatch between one's performance and the standard of comparison, complexity of task, and social comparisons (Karoly, 1993).

Self-Efficacy. In addition to goal-setting and the monitoring-judgment-reaction chain of self-regulation, self-efficacy is another important mechanism (Karoly, 1993). Self-efficacy, a belief in one's capability of performing a specific task, pertains to mastery, effectiveness and control (Bandura, 1986). This construct is distinct from self-esteem, which refers to a more general level of self-confidence, feelings of adequacy, and self-acceptance. In fact, some argue that self-esteem may be the aggregation of self-efficacy perceptions across a broad range of specific tasks (Gist, Schwoerer, & Rosen, 1989). Self-efficacy beliefs can be altered in a variety of ways, including observational learning and performance experiences. Research has shown that self-efficacy mediates the relationship between past performance and subsequent behavior and outcomes (Stumpf, Brief, & Hartman, 1987).

Self-efficacy's role in self-regulation is that it affects the challenges that are undertaken, the level of effort expended, the level of perseverance in the face of difficulties, self-aiding or self-impeding thinking patterns, and vulnerability to stress and depression (Wood & Bandura, 1989). Studies have demonstrated the impact of self-efficacy judgments on diverse outcomes such as perception and tolerance of physical pain, smoking cessation and relapse, distress responses to fearful stimuli, stress coping, and the use of managerial decision-making strategies (Karoly, 1993).

Metaskills and Boundary Conditions. The description of the phases and the various subfunctions of the self-regulatory process suggests that the process is sequential and straightforward. However, the coordination of complex behavior requires 'basic capabilities, superstructures or metaskills' that are not explicitly included in self-regulation, but which clearly impact the processes and outcomes (Karoly, 1993). Some of these include forethought, self-reflectiveness, the capacity to use images and language, the capacity to learn vicariously, perspective taking, planning, and affect regulation or emotional intelligence.

Karoly (1993) also states that in a systems view of self-regulation it is necessary to include boundaries, which he defines as "theoretically salient or plausible limits on the realization of self-regulation" (p. 41). Thus, these boundaries can be conceptualized as "plausible moderators of self-directiveness" (p. 41). They are represented by individual differences and include differences in sensitivity to feedback, exposure to rules of conduct, emotional reactivity (temperament), attributional habits, the ability to tolerate boredom, and ambiguity.

Self-Regulatory Failure

While it seems that all individuals, or at least adults, are capable of self-regulation, sometimes self-regulation fails (Karoly, 1993). Attempts at self-regulation do not always produce successful outcomes. Individuals' attempts at self-regulation may have deleterious short-term effects, long-term effects, or both. The reasons for failure may involve one or more of the following: subfunction malfunction; a breakdown in cross-

function communication; pursuit of inappropriate goals or standards; lack of supportive metaskills; and boundary conditions (Karoly, 1993).

Certainly, the achievement motivation and other psychological theories presented in previous chapters can be used to explain why and how self-regulatory failure occurs. For example, according to the Implicit Theories Model, maladaptive goals and the associated implicit beliefs that establish the framework for interpreting information render one susceptible to self-regulatory failure. The contributions of the Implicit Theories Model and other mechanisms in explaining these failures are described below.

Industrial-Organizational Applications

Self-regulation and its failure has been incorporated and researched in nearly all subdisciplines of psychology including personality, motivation/emotion, social, clinical/abnormal, developmental, health, education, experimental, and industrial-organizational (Karoly, 1993). In one program of industrial-organizational research, Bandura and others have investigated the role of self-regulatory processes in complex managerial decision-making and the impact of implicit theories of ability, social comparison, goal-setting and self-efficacy on these processes (Bandura & Jourden, 1991; Cervone, Jiwani, & Wood, 1991; Wood & Bandura, 1989; Wood, et al., 1990). In his theory of Self-Leadership, Manz (1986) describes self-influence processes that incorporate behavioral- and cognitive-focused strategies that are similar, if not identical, to self-regulatory processes. In this section, these adaptations of self-regulation are reviewed.

Self-regulatory processes and their determinants. In this program of research, each of the experiments studied participants' decision-making during a computerized

organizational simulation. While different self-regulatory processes and experimental conditions were utilized, similar patterns of findings were obtained. Wood & Bandura (1989) investigated whether conceptions of ability (stable entity vs. acquirable skill) would influence managerial decision-making performance through their effects on the self-regulatory mechanisms of perceived self-efficacy for goal attainment and personal goal setting and analytic strategies that aid discovery of effective managerial decision rules. They used a computerized organizational decision-making simulation in which participants served as furniture manufacturer managers whose job was to allocate workers to the five different production functions so that the manufacturing assignment would be completed in an optimal time and to use various motivational factors for optimizing group performance (i.e., goals, instructive feedback, and social rewards). The simulation allowed for multiple trials and self-regulatory measures were taken at three different points in the simulation. Perceived self-efficacy was measured using a scale that described nine levels of production attainments, ranging from 30% better to 40% worse than standard production time. Participants rated their confidence that they could get their group to perform at each of these levels of productivity.

The authors induced the entity and acquirable conceptions of ability through the introductory instructions participants read before beginning the simulation task. After being told that they had performed the organizational simulation against a difficult performance standard, individuals in the stable entity conception of ability condition lowered their organizational goals, suffered losses in perceived efficacy, and used analytic strategies ineffectively. In contrast, individuals in the acquirable skill conception of ability condition set challenging organizational goals, maintained their perceived efficacy, and

used analytic strategies effectively. It was further found that perceived self-efficacy had a direct effect on performance and an indirect effect through its influence on analytic strategies. Personal goals affected organizational performance only through analytic strategies. Prior performance impacted subsequent performance only through its impact on self-regulatory mechanisms.

Wood, et al. (1990) conducted a similar study using the same organizational simulation. However, they investigated the effect of perceived self-efficacy, task complexity, assigned and self-set goals, and analytic strategies on performance. In this study there were four groups that varied in task complexity and type of assigned goal: (a) Low task complexity-do your best goal; (b) low task complexity-specific, challenging goal; (c) high task complexity-do your best goal; and (d) high task complexity-specific, challenging goal. They found that self-efficacy, measured as confidence in attaining six levels of production, impacted performance directly and through its effects on goal setting and use of analytic strategies. Self-set goals also impacted performance, but only in earlier trials. Also these goals were not related to the use of analytic strategies. Assigned challenging goals had a positive effect on performance in the low task complexity condition, but not the high task complexity condition.

Bandura & Jourden (1991) conducted yet another study using the same simulation. However, the focus of this study was the impact of social comparison in the self-appraisal of capabilities on organizational performance through their impact on self-regulatory mechanisms. The self-regulatory mechanisms measured were perceived self-efficacy (confidence in attaining nine levels of production), self-set goals (performance aims), self-

evaluative reactions (satisfaction or dissatisfaction with achieved performance during the trial), and analytic strategies.

The research on the self-appraisal of capabilities through social comparison has focused on why people engage in social comparison, with whom they choose to compare themselves, the role of performance and attribute similarity in the selection of social comparisons, and the self-evaluative consequences of these choices. However, many of these studies do not measure social comparisons over time or incorporate the role of self-regulatory mechanisms.

Bandura and Jourden (1991) tested four different experimentally induced patterns of social comparison: (a) Similar capabilities, in which participant's decisional capability is comparable to that of peers of similar status; (b) superior capabilities, in which decisional capability is higher than peers; (c) progressive mastery, in which initially the comparison is superior, but eventually the comparison group surpassed them during the simulation; and (d) progressive decline, in which initially the participant's decisional capability is similar to that of peers, but then declines during the simulation, suggesting that the participant does not have adequate decisional capability. It was found that the progressive mastery, superior capabilities, and similar capabilities comparisons positively impacted perceived self-efficacy, analytic thinking, challenging goal setting, affective self-reaction, and organizational performance. In contrast, progressive decline undermined self-regulatory processes and negatively impacted performance. Further, path analysis showed that perceived self-efficacy had a positive influence on performance directly and indirectly through its effect on the adoption of challenging goals, positive affective self-reactions, and the use of efficient analytic strategies to learn managerial rules.

Using the same simulation, Cervone, et al. (1991) tested whether the presence versus absence of a challenging, specific performance goal would moderate the strength of the relationship between organizational performance and two self-regulatory mechanisms, self-efficacy judgments and self-evaluative reactions. There were three goal conditions: (a) No specific goal in which participants were instructed to do their best to produce efficiently; (b) difficult goal in which participants were instructed to complete the orders within a standard time; and (c) moderate goal in which participants were instructed to complete orders in a time no more than 25% longer than standard time. During the simulation, participants received feedback indicating their performance relative to standard time. As predicted, self-regulatory mechanisms had a stronger impact on performance in all three goal conditions. When participants received a specific goal, they experienced positive self-evaluations and higher perceived self-efficacy, which produced higher performance. In addition, it was found that self-evaluative affect (dissatisfaction with performance) impaired performance.

These studies of complex managerial decision-making all highlight the importance of self-regulatory mechanisms in motivation and performance. The mechanisms studied included perceived self-efficacy, self-evaluative reactions, self-set goals, and analytic strategies. The studies are noteworthy methodologically in that they did not statically represent these mechanisms by measuring them at one or two points in time. Instead, they studied participants over time and measured self-regulatory activities at different points during the simulation. This approach revealed that self-regulatory processes are dynamic psychological processes and are differentially activated by different variables (Cervone, et al., 1991).

Self-Leadership Theory. Some argue that a new form of leadership, superleadership, in which the leader leads others to lead themselves (Manz & Sims, 1987; Manz & Sims, 1991), facilitates the self-leadership energy within each person (Manz & Sims, 1987; Manz & Sims, 1989; Manz & Sims, 1991). Self-leadership, a concept which Manz derived primarily from Bandura's social learning theory (1977b), is similar, but not identical, to self-management or self-control (Manz, 1986; Manz & Sims, 1980; Mills, 1983). Self-management "suggests a process in which a person, when faced with response alternatives, decides to choose what would otherwise be regarded as a low-probability response" (Mills, 1983, p. 447). It focuses on strategies designed to facilitate targeted behavioral changes or modifications that have been identified as management problems (e.g., Manz & Sims, 1980). These behaviors, therefore, are not performed for their intrinsic value, but because of what the individual will receive for his/her performance (Manz, 1986). Self-management strategies include self-goal setting, cueing strategies, self-reinforcement, self-punishment, and rehearsal.

Manz (1986) argues that self-influence should be viewed as more than a set of strategies designed to facilitate certain behaviors that are not naturally motivating and that meet externally defined and personally undesired standards. Self-leadership, therefore, is defined as "the process of influencing oneself to establish the self-direction and self-motivation needed to perform" (Neck & Manz, 1992, p. 682). It is a comprehensive self-influence concept in that it "concerns leading oneself toward performance of naturally motivating tasks as well as managing oneself to do work that must be done but is not naturally motivating" (Manz, 1986, p. 589).

Thus, there are three critical elements which distinguish self-leadership from self-management (Manz, 1986): (a) It addresses a wider range of standards for self-influence (i.e., superordinate standards in addition to self-management standards); (b) it incorporates the role of intrinsic motivation (i.e., natural rewards or rewards that result from performing the tasks themselves); and (c) it suggests additional strategies for self-control (i.e., work context and task performance process strategies and the self-leadership of thought patterns).

Two classes of self-leadership strategies, behavioral- and cognitive-focused strategies, have been identified (Manz & Sims, 1989, 1991). Behaviorally-focused strategies, which focus on effective behavior and action, include self-observation, self-goal setting, cue management, self-reward, constructive self-punishment or self-criticism, and rehearsal. Cognitive-focused strategies, which focus on effective thinking and feeling, include building natural rewards into tasks and focusing on these natural rewards so that one experiences a sense of competence, self-control, and purpose; and establishing effective thought patterns by managing beliefs and assumptions, mental imagery, and internal self-talk or dialogue.

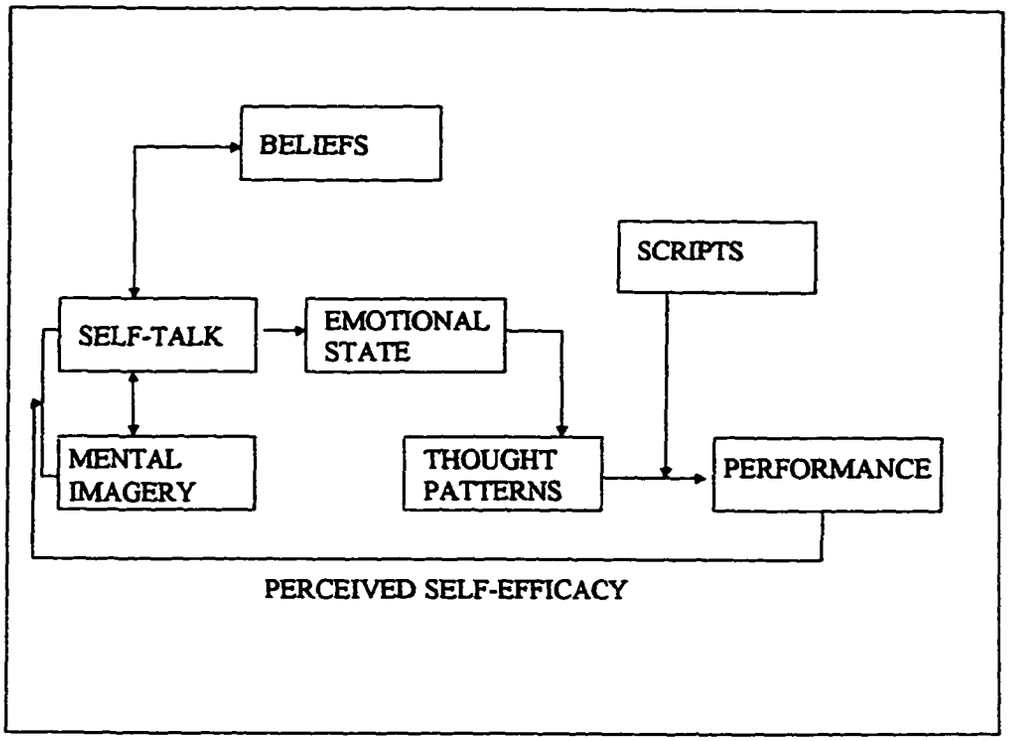
These cognitive-focused strategies are central to the concept of thought self-leadership in which the "...underlying premise is that people can influence or control their own thoughts through the application of specific cognitive strategies and ultimately impact individual and organizational performance" (Neck & Manz, 1992, p. 682). Self-talk and mental imagery are the key components or building blocks of the thought self-leadership model. While they are basically distinct from each other, the model does suggest that these two elements influence each other and that each may contain elements of the other.

Self-talk or self-verbalization is an individual's internal dialogue and is defined as that which we covertly tell ourselves (Neck & Manz, 1992). Beliefs and self-verbalizations, in turn, influence emotions and subsequent behavior. For example, irrational performance beliefs lead to unreasonably high self-standards. These standards, in turn, lead to the anticipation of unpleasant consequences of not performing well, which leads to anxiety and, subsequently, poor performance (Bonadies & Bass, 1984). Considerable support for the relationship between self-talk and individual performance has been found across a variety of tasks and activities in diverse areas such as sports psychology, clinical psychology, counseling psychology, education, and communication (Neck & Manz, 1992).

Mental imagery, a symbolic/mental representation, may be defined as the imagining of successful performance of a task resulting from our behavior prior to its completion (Neck & Manz, 1992). The relationship between mental imagery and performance on a variety of tasks under a variety of conditions has been well documented in sports psychology, counseling education, and clinical psychology. Feltz and Landers (1983), for example, conducted a meta-analysis of studies on the relationship between mental practice and subsequent performance in sports. From the 60 studies yielding 146 effect sizes, the average effect size obtained of .48, statistically corrected for artifactual variance, suggests that there is a moderate positive relationship. It was further found that studies employing cognitive tasks had larger effect sizes, on average, than motor or strength tasks.

The comprehensive thought self-leadership model presented in Figure 3 incorporates several moderating and mediating variables, including the role of beliefs, emotions, patterns of thought, psychological scripts, and perceived self-efficacy (Neck and Manz, 1992).

Figure 3. Comprehensive thought self-leadership model. (Neck & Manz, 1992, p. 684)



There are several parts to this model. First, as stated earlier, irrational or maladaptive beliefs and self-verbalizations produce a distressful emotional state, while rational beliefs and self-talk lead to a positive emotional state (Harrell, Chambless, & Calhoun, 1981; Neck & Manz, 1992). This relationship between cognitions or beliefs and affective or emotional states is mediated by self-talk or self-verbalizations (Harrell, et al., 1981). That is, one's beliefs are related, reciprocally, to the type of internal dialogue that individuals engage in, which results in a corresponding emotional state.

Several studies have found negative, or inverse relationships between rational self-talk and maladaptive affects (e.g., Carver & Gaines, 1987; Harrell et al., 1981; Rosin & Nelson, 1983). Additionally, several studies have found that affect influences learning, perception, memory, thinking, decision-making, problem-solving, judgment, evaluation,

social learning, and social judgment (e.g., Isen & Daubman, 1984; Sims & Gioia, 1986). The relationship between affect and measures of performance is better understood through the mediating role of thought patterns.

The second part of the model suggests that the affective or emotional state leads to a specific type of thought pattern (Neck & Manz, 1992). Individuals may engage in negative or positive thought patterns (habitual ways of thinking triggered by specific circumstances) which in turn affect behavioral and emotional reactions. The model suggests that mental imagery and self-talk interact and influence each other to produce an individual's thought patterns. These thought patterns are characteristic ways of thinking that can trigger certain responses. One important point is that, unlike the relationship between self-talk and thought patterns, the relationship between mental imagery and thought patterns is not mediated by a corresponding, emotional state.

Neck and Manz (1992) offer two types of thought patterns, opportunity thinking and obstacle thinking, that a person can adopt. As implied by the name, opportunity thinking focuses on opportunities, positive challenges, and constructive ways of dealing with situations that can trigger, for example, motivation, persistence, and confidence (Manz, Adsit, Campbell, & Mathison-Hance, 1988). Obstacle thinking focuses on negative aspects and obstacles in challenging situations that can trigger avoidance, defensive behavior, anxiety, and other outcomes (Manz, et al., 1988) Therefore, the model suggests that positive thinking enhances subsequent performance, while negative thinking hinders subsequent performance. One study has found that managers exhibit positive and negative habitual patterns of thought in discerning threats and opportunities in situations encountered (Jackson & Dutton, 1988).

Two other elements of the model are instrumental. One element that is important to the relationship between thought patterns and performance is the moderating role of psychological scripts. The script is a type of cognitive schema which has been applied broadly in cognitive, developmental, social, and clinical psychology (Abelson, 1981) and has been recently applied to vicarious learning and other behaviors in organizational settings (Gioia & Manz, 1985; Gioia & Poole, 1984). According to Gioia and Manz (1985), a script is a "hypothesized cognitive structure that provides a guide to appropriate behavior sequences in a given context" (p. 528). Scripts are important in that they imply that individuals automatically adopt stereotypical behavior when confronted by cues in certain types of situations (Neck & Manz, 1992). Thus, they will be most salient in recurring situations.

The final element of the model is past performance and perceived self-efficacy (Neck & Manz, 1992). According to the model, successful performance outcomes will directly influence an individual's self-talk and mental imagery, which will subsequently impact affect. Specifically, the more experience with success, the greater the likelihood that the person will engage in positive self-talk and mental imagery. The authors support this logic with Bandura's (1977b) task specific theory of self-efficacy. According to this theory, expectations of personal efficacy are derived from four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1977b). Further, the theory implies that past experience or performance accomplishment is the strongest contributor to expectations of efficacy. Also, self-efficacy expectations are linked to performance in that they affect the amount of effort expended and the degree of persistence exhibited (Bandura, 1977b). While there is considerable

empirical evidence on the role of self-efficacy in work-related behavior (Sadri & Robertson, 1993), it appears to be the weakest link in the thought self-leadership model. That is, this element of the model has not been well developed or integrated by Neck and Manz (1992).

Additionally, Neck and Manz (1992) derived several hypotheses from their comprehensive thought self-leadership model for future research, although they have not been tested empirically. Thus, while the model is based on well developed psychological theories that have been supported in diverse areas of psychology, there is obviously a need to test the model as an integrated whole.

Summary and Future Research Directions

The focus of self-regulation is on how individuals direct and control their own actions through internal processes instead of through the environment. As shown, several processes are involved in the complex process of self-regulation, including: goal setting, self-monitoring, standards, discrepancy detection, self-evaluation, and self-efficacy. The role of these measurable and manipulable processes has been investigated in virtually all psychology subdisciplines.

While the results are promising, this research is still in its infancy. Some of the processes have been studied extensively on an individual basis. However, there has been little systematic investigation of these processes together. Thus, while a good deal is known about some of these processes, less is known empirically about their relationship with one another. Future research needs to focus on building comprehensive models that

incorporate many of these processes and testing the validity of these models for various psychological phenomena in different domains.

One comprehensive model that has been advanced in the organizational and management literatures is the comprehensive thought self-leadership model. This is conceptualized as a process by which people can influence and control their thoughts through specific strategies that will ultimately impact some aspect of performance (Manz, 1986). This relationship has been supported by research in such diverse fields as sports psychology, clinical psychology, counseling psychology, education, and communication (Neck & Manz, 1992). Neck & Manz (1992) incorporate several social-cognitive constructs and processes in their model, including mental imagery, self-talk, implicit theories or beliefs, emotions, psychological scripts, thought patterns, and perceived self-efficacy. A problem with much of this research, is that they have primarily used self-report measures. Additionally, the model, in its entirety, has not been tested extensively.

Thought self-leadership and self-regulation, in general, have potential use for many aspects of organizational behavior at the individual level. The effective and ineffective operation of self-regulation can help explain how individuals affect, and are affected by, the work environment. The present study incorporates some of this theory into the Implicit Theories Model and applies it to organizational behavior.

Chapter 7

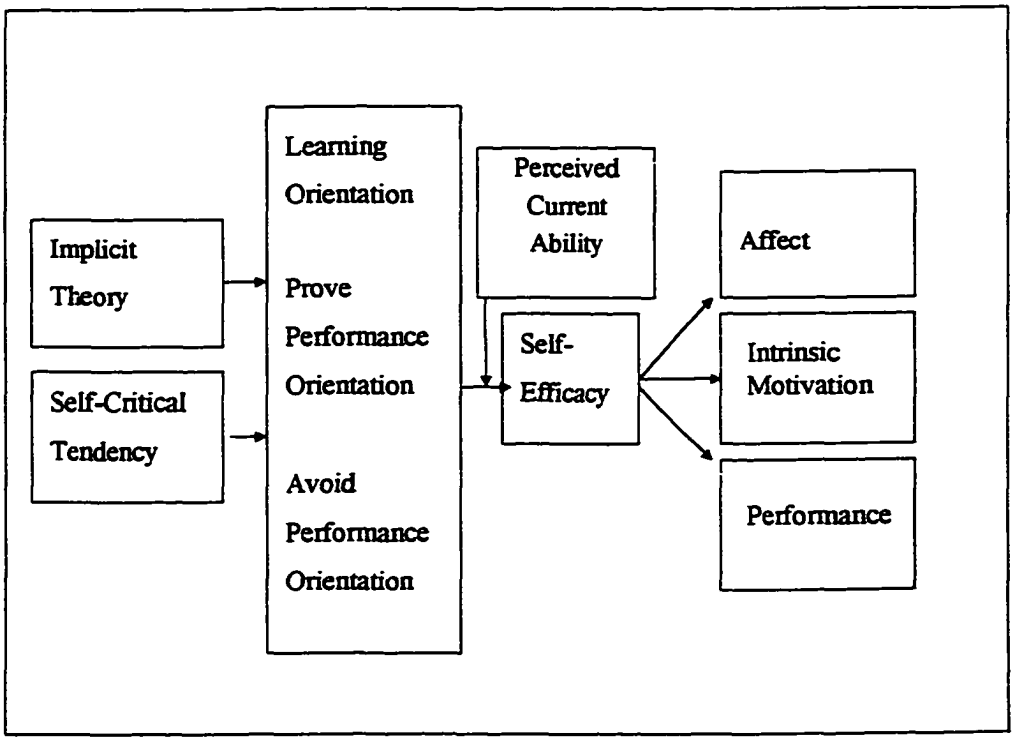
The Present Study: Problem and Hypotheses

> Gone are the days when righteous philosophers could puff indignantly at the unhygienic practice of not defining the key terms of a new theory. We know all too well that rigorous and exact definitions come relatively late in the development of the sciences, that they are often preceded by a period in which theoretical language is put to work with highly flawed views about the objects to which it is intended to apply. During this period scientists may yearn for relief from the obscurity into which their linguistic practices lead them. They struggle along, however, . . . trying in a piecemeal way, to make their statements more exact, so that they will at last know what they are talking about. (Kitcher, 1985, pp. 342-343)

The purpose of the present study is to examine the impact of individuals' achievement goal orientation on affect, intrinsic motivation, and performance. It was proposed that individuals subscribe to different implicit theories of decision-making ability (malleable quality or a fixed trait). These theories in turn determine the goals adopted in achievement situations, which, in turn, set up different motivational patterns and produce different psychological, cognitive and behavioral outcomes in achievement situations. In the present study, self-critical tendency, the self-critical and self-defeating processing of self-relevant information, was included as an additional antecedent of goal orientation. Further, it was hypothesized that self-efficacy mediates the relationship between goal orientation and the outcomes of affect, intrinsic motivation, and performance. Lastly,

perceived ability was believed to moderate the relationship between goal orientation and self-efficacy. The structural model depicting the relationships among the variables included in the study, with temporal sequencing of mediator variables and the impact of the moderator variable, is presented in Figure 4.

Figure 4. Structural representation of the study model.



The present study, therefore, focuses on four main questions:

1. Do individuals' implicit theories of ability and self-critical tendency determine their goal orientation?
2. What impact does goal orientation have on outcomes such as affect, intrinsic motivation, and performance?
3. Do self-regulatory processes play a mediating role in the relationship between goals and outcomes?
4. Does perceived ability play a moderating role in the relationship between goal orientation and self-regulatory processes?

The proposed relationship between implicit theories and response patterns following failure is based on the Implicit Theories Model of motivation and personality (Dweck & Leggett, 1988). The relationships and roles among affective, behavioral, and cognitive processes are based on self-regulatory constructs and models. The Implicit Theories Model was developed empirically from studies of children's reactions to failure. Since its original formulation and application, the model has been extended to personal attributes other than intelligence (e.g., morality) and beyond the self to social judgments and reactions. The extant research of the model over that past 20 years has generally shown support for many of its major propositions. However, it has been suggested that a trichotomous, instead of a dichotomous, representation of goal orientation be adopted to better explain and predict individual behavior. In addition, because research using adult samples has been scarce, there is growing interest in the model's applicability to adults, particularly in organizational settings.

Self-regulatory constructs and models have been applied extensively in various domains of psychology, including clinical/abnormal, developmental, educational, experimental, industrial-organizational, motivation/emotion, personality, and social to explain complex behavior. Although most of these studies are rather recent, the results are promising. With the inclusion of these processes, the present study is potentially valuable in that it not only seeks to explain when and why individuals have adaptive or maladaptive responses to work-related challenges and failure, but how these responses operate.

Participants served as managers in a computerized managerial decision-making simulation within which their performance was measured. The other outcomes of self-efficacy, affect and intrinsic motivation were measured using self-report questionnaires. Self-report measures were also used for the individual difference variables, namely self-critical tendency, implicit theory and goal orientation. Perceived ability was induced experimentally through bogus feedback on a management skills inventory.

Validity of the task and business simulations. A valid and often voiced criticism of organizational research is that experiments often utilize meaningless tasks that are not representative of work situations. Because the value of the task used in experiments is such an important issue, the value of this specific simulation, SimNurse, and of business simulations in general, is reviewed.

Computer simulations are tools for examining work behavior in a dynamic, multi-goal environment (Liu, et al., 1996). Although the simulated job is that of a nurse manager, the characteristics of the task are such that it is realistic and it is really generalizable to any managerial position. As stated by Liu, et al., "the demands and nature

of aspects of the job represent an operationalization of a task within the parameters of a complex managerial task with multiple goals, multiple constituencies, and with an array of available sources of information" (1996, p.8).

With their capacity for systematic data collection, simulations have several advantages over other possible tasks. First, and perhaps their strongest characteristic, is that they are relatively realistic representations of organizational settings, experiences and behavior. Thus, they have a higher degree of face validity than other experimental tasks used in organizational research. Second, they allow for precise measurement and tracking of behavior, computed automatically. Third, experimental control is maximized by allowing the researcher to alter the environmental parameters such as type and amount of feedback, and decision-making complexity. Thus, they are very useful in examining cause-and-effect relationships. Fourth, simulations help to reduce experimenter bias by allowing for the inclusion of instructions, feedback, and self-report measures onscreen. The short review of the validity and applications of business simulations will further illustrate these points.

Business simulations are used to create simulated experiential environments within which learning and behavioral changes can occur and be observed (Keys & Wolfe, 1990). They can be either computerized or non-computerized and represent either the whole organization (total enterprise games) in which decisions are made in marketing, production, and finance and require the strategic integration of several subunits, or concentrate on a single subunit of the firm (functional business game). While they are usually used in teams that are in competition with one another, there are simulations that can be played individually by one person. Although they are simplified and contrived

situations, they do induce real-world responses by those participating. Business simulations are used extensively in organizations and business schools to teach students and incumbents how to manage others, stress, and time, and to develop decision-making skills (Keys & Wolfe, 1990; Wolfe & Chanin, 1993). The rationale for using this instructional method is based on a learning model in which: concrete experience → observation and reflection → formation of abstract concepts and generalizations → testing implications of concepts in new situations (Keys & Wolfe, 1990).

The extensive business gaming evaluation literature has not focused on the external validity of simulations (i.e., based on participant performance in later life), but internal validity. For example, in a recent survey of new business school graduates, business simulations were voted the most effective method (i.e., compared to lectures, case studies, and experiential exercises) for teaching four important management skills: the ability to adapt to new tasks, make decisions, organize, and assess a situation quickly (Teach & Govahi, 1993). Other studies have generally found that they are effective and internally valid teaching methods (Keys & Wolfe, 1990).

Management games and simulations have also been used for a wide array of research questions, including the impact of information and support system characteristics on decision-making, group behavior and decision-making, organization development, and the testing and prediction of managerial and leadership performance (Keys & Wolfe, 1990). A significant portion of this simulation and gaming literature has also focused on the factors that contribute to performance success or failure, which includes the nature of the simulation itself, game administration, group dynamics, and personal factors of team members. It has been assumed that superior game performance is associated with high

learning levels because students with high aptitudes and academic achievement levels outperformed those with low levels of the same characteristics. More recently there has been an interest in the role of personality variables in explaining differences in individual game performance (e.g., Gosenpud & Miesing, 1992; Gosenpud & Washbush, 1996; Patz, 1992).

In one series of studies with teams in 10 industries, Patz (1992) found strong positive correlations between performance in a total enterprise simulation and a high composition of team members who processed information intuitively (vs. sensing) and made decisions by thinking (vs. feeling) as measured by the Myers-Briggs type indicators. However, Gosenpud and Washbush (1996) failed to find any significant relationships. This discrepancy probably does not indicate that personality is not a contributor to performance but that population characteristics, game administration differences, and instructor expectations (i.e., the Rosenthal effect) are important variables that must be incorporated into any research design. The present study, therefore, is important to this literature in that it presents a new aspect of personality and how it predicts simulation performance.

Hypotheses

The specific hypotheses the present study is designed to address are provided along with a brief overview of the theoretical predictions and empirical investigations from which they were developed. Indeed, as the quote at the beginning of the chapter suggests, rigorous and exact definitions and statements, fundamental to theory building and

empirical investigations, is often elusive. The organization of this material is intended to add clarity and precision to the statements made and hypotheses set forth for the study.

Antecedents of goals. Goal orientation refers to the superordinate classes of goals that influence individuals in achievement situations. Dweck (1986) and Dweck and Leggett (1988) have identified two classes of goal orientation: (a) A learning goal orientation in which individuals seek to develop competence and master new tasks and (b) a performance goal orientation in which individuals seek to demonstrate and validate their competence to themselves and others by seeking favorable judgments and avoiding negative judgments about their competence.

In their research, Dweck and Leggett (1988) also identified implicit theories, which are theories individuals have about their ability, that predispose them toward different goal orientations. Individuals with a learning goal orientation tend to hold an incremental theory in which they view their ability as a personal attribute that is malleable and increasible. Individuals with a performance goal orientation tend to hold an entity theory in which they view their ability as a personal attribute that is fixed and uncontrollable.

However, some recent studies have found only weak correlations between implicit theories and goal orientation (Hayamizu & Weiner, 1990; VandeWalle, 1997). One reason may be that the researchers define and operationalize performance and learning goals differently. Hayamizu & Weiner (1990), for example, did not include challenge avoidance in their performance goal measure even though Dweck and Leggett (1988) did.

It may also be possible that implicit theories are not the only antecedents of goal orientation. Other antecedents may need to be considered in developing a more powerful and complete framework for explaining goal orientation. One construct that appears to

have utility is self-critical cognition, a tendency to be self-critical and self-defeating in processing self-relevant information (Ishiyama & Munson, 1993). Researchers have argued that self-critical and self-defeating cognitive processes are closely related to negative self-perceptions. This construct may be especially useful in explaining why some individuals have a greater desire to avoid negative judgment than others do.

Although the performance goal has been conventionally defined as both the desire to gain favorable judgments and the desire to avoid unfavorable judgments about one's ability (e.g., Elliott & Dweck, 1988; Nicholls, 1984), the more recent partitioning of the performance orientation into two separate dimensions, performance-approach and performance-avoidance, was adopted here (e.g., Elliot & Harackiewicz, 1996; VandeWalle, 1997). That is, individuals with a performance-approach orientation are concerned with the attainment of normative competence and desire gaining approval and demonstrating their ability. Individuals with a performance-avoidance orientation seek to avoid disapproval and the demonstration of low ability. Thus, the former focus on positive outcomes leads to the mastery response pattern similar to the response pattern of individuals with a learning orientation. The latter focus on negative outcomes leads to the helpless response pattern.

Elliot and Harackiewicz (1996) have found that that these two performance goal orientations, which were experimentally induced, had different relationships with intrinsic motivation. In a meta-analysis, Elliot (as cited in Elliot & Harackiewicz, 1996) found that less than half of the published studies on performance goal orientation as a unitary construct supported the proposed hypotheses of the deleterious effect of performance goals on intrinsic motivation. However, this percentage rose to 90% when the

manipulations were classified into separate approach-avoidance categories. This lends further support to the greater utility of a trichotomous framework within which there is one learning goal and two types of performance goals, performance-approach and performance-avoidance.

Thus, achievement goal orientation is determined by implicit theories of managerial decision-making and a self-critical tendency. Specifically:

H_{1A}: A performance-avoidance goal orientation is determined by an implicit entity theory and a tendency to be self-critical.

H_{1B}: A performance-approach and a learning goal orientation are determined by an implicit entity theory and a tendency not to be self-critical.

Goals and outcomes. It has been documented extensively that individuals with different goal orientations exhibit different outcomes in response to failure and challenge (e.g., Diener & Dweck, 1978, 1980; Dweck, 1983). Following failure, individuals with performance goals exhibit various outcomes, including decrements in performance, lower intrinsic motivation, easy goal choice, and lack of persistence. In contrast, individuals with learning goals exhibit considerably smaller decrements in performance and motivation, sometimes even maintaining these levels, and manifest no change in persistence.

Thus, it is proposed that when faced with challenge, individuals' goal orientation determines affect, intrinsic motivation, and performance outcomes. It is further proposed that only the performance-avoidance orientation will have a deleterious effect. Specifically:

H_2: In challenging situations, individuals with a performance-avoidance orientation have less positive affect and lower performance and reported intrinsic motivation than individuals with a learning goal orientation and a performance-approach orientation. The differences will be smaller with the performance-approach goal orientation than with the learning goal orientation.

Mediators of goals and outcomes. It has also been well documented that the relationship between goals and outcomes may not be direct. That is, the differential effect of goals on outcomes is determined by individuals' cognitive, affective, and behavioral self-regulatory processes (e.g., Elliot & Harackiewicz, 1996; Sujan, et al., 1994; Wood & Bandura, 1989). The mastery response pattern is characterized by adaptive self-regulatory activities that enhance affect, intrinsic motivation, and performance. The helpless response is characterized by self-regulatory activities that undermine intrinsic motivation and have a deleterious effect on affect and performance.

There are many possible mediators of the relationship between dominant goal orientation and outcomes. Possible cognitive mediators include self-efficacy, standards, self-monitoring, self-evaluative judgment, and discrepancy detection and reduction. Possible affective mediators include pride, fear, guilt, depression, resignation, surprise, threat, and anxiety. Possible behavioral mediators include goal setting, concentration, task involvement, and strategy use. Clearly, all of these variables cannot be incorporated into one study. The sample size required to have adequate power would be too large to make such a study feasible. In addition, the path analysis would be too complex and difficult to interpret.

While there are many possible mediators, the one selected for study is self-efficacy. Based on prior research, this variable seems to be a good candidate that may account for the proposed effects of goal orientation on affect, intrinsic motivation, and performance (e.g., Sujan, et al., 1996; Weiner, 1978, 1985; Wood & Bandura, 1989; Wood, Bandura, et al., 1990). Thus, it is proposed that the direct effects of goal orientation on the outcomes of performance and intrinsic motivation are mediated by the self-regulatory process of self-efficacy (i.e., goal orientation → self-efficacy → affect, intrinsic motivation and performance). Specifically:

H_{3A}: Self-efficacy mediates the relationship between goal orientation and affect.

H_{3B}: Self-efficacy mediates the relationship between goal orientation and intrinsic motivation.

H_{3C}: Self-efficacy mediates the relationship between goal orientation and performance.

Perceived current ability as a moderator. An important component of the Implicit Theory Model is the moderating role of self-perceived ability on the relationship between goal orientation and response pattern. Learning goal and performance-approach orientations are expected to have a uniform effect on self-regulation and outcomes, regardless of perceived ability. The reason for this is that these individuals are focused on task mastery and the attainment of competence, and so low current ability in a valued area may make skill acquisition more appealing. The effect of performance-avoidance goal orientation is expected to vary with respect to perceived ability. Individuals demonstrate

the mastery pattern when perceived ability is high and the helpless pattern when perceived ability is low. Although self-perceived ability is generally conceptualized as a dispositional variable, it may also be experimentally induced. In this study, individuals received bogus feedback about their ability to induce perceptions of low or high ability. It was proposed that:

H_{4A}: Individuals with a learning approach goal orientation exhibit the mastery pattern of self-regulation, with subsequent effects on performance and intrinsic motivation, regardless of level of perceived competence.

H_{4B}: Individuals with a performance-approach goal orientation exhibit the mastery pattern of self-regulation, affect, performance and intrinsic motivation, regardless of level of perceived competence.

H_{4C}: Individuals with a performance-avoidance goal orientation and high perceived ability exhibit the mastery pattern of self-regulation, affect, performance and intrinsic motivation, whereas individuals with a performance-avoidance goal orientation and low perceived ability exhibit the helpless pattern of self-regulation, affect, performance, and intrinsic motivation.

Chapter 8

Method

Overview

This study was designed to examine the psychological and behavioral consequences of goal orientation in a challenging, simulated work situation. Specifically, the study examined: (a) Two causal antecedents of goal orientation, implicit theories and self-critical tendency; (b) the influence of goal orientation on performance, affect, and intrinsic motivation; (c) the mediating role of self-efficacy in the relationship between goal orientation and performance, affect, and intrinsic motivation; and (d) the moderating role of self-perceived ability on the relationship between goal orientation and self-efficacy.

Participants served as managers in a computer-based simulation of a manager's job. They performed the task under either a high or low ability condition, to which they were randomly assigned. Self-report measures of implicit theory of managerial decision-making ability, goal orientation, and self-critical tendency were obtained one to two weeks prior to working on the simulation. Self-efficacy was measured immediately prior to working on the simulation. Performance, operationalized as the average number of shifts for which goals were not met, was calculated automatically in the simulation. Self-report measures of affect and intrinsic motivation were obtained immediately after the simulation..

Sample Size

Using the methods described by Cohen (1988), two separate power analyses revealed that approximately 116 participants were needed for this study. Two different

analyses were conducted because of the different analyses that were used to test hypotheses. First, the study is a 2 (perceived ability) x 3 (goal) factorial design. The required sample size necessary for power to be .80 is 65, according to the following specifications:

$$a = .05, \quad u = 6\ (2 \times 3), \quad f^2 = .15, \quad s = 2, \quad k_y = 2, \quad k_x = 3$$

Second, a path analysis was conducted to confirm the causal ordering of variables, along with moderator and mediator effects. Although there are no power tables for this type of analysis, it is appropriate to use power tables for multiple regression. For this analysis then, the required N is approximately 58, according to the following calculation, N = 19.4 (1 - .25)/.25 = 58, and based on the following specifications:

$$a = .05, \quad u = 7, \quad R^2 = .25^4, \quad \text{Power} = .90, \quad v = 120, \quad \lambda = 19.$$

Since a two-group LISREL analysis was used to test the moderator effect of ability, the sample size was doubled to about 116.

Participants

Data were collected from three independent samples. The first two samples were drawn from a large urban city college in the Northeast. Sample A consisted of 34 undergraduate day and evening students who were former introductory psychology students of the principal investigator. Sample B consisted of 52 undergraduate day and evening students enrolled in two sections of an industrial/organizational psychology

[4] This is a conservative estimate, as others have obtained R^2's ranging from .48 to .78 (Bandura & Jourden, 1991; Cervoni, Jiwani, & Wood, 1991; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990).

course. Analyses were conducted to determine whether there were any differences between the two student samples. Since there were not, the two samples were combined.

The participants from these two samples had an average age of 25.50 years; 69.0% were women and 31.0% were men. The participants were also racially/ethnically diverse: Asian/Pacific Islander (19%), Black/African American (20%), Hispanic/Latino/ Chicano (20%), Native American/Indian (0%), White/Caucasian (30%), and Other (11%). Approximately 80% were juniors or seniors in college. Lastly, 87% reported that they were currently employed. Of those not employed, all indicated that they had been previously employed part- or full-time.

Sample C consisted of 36 adults solicited from a variety of private- and public-sector organizations in the Northeast with whom the author is familiar and has relationships. The participants from this sample had an average age of 36.50 years; 67.0% were women and 33.0% were men. The participants were not racially/ethnically diverse, with only two groups represented: Hispanic/Latino/Chicano (6%) and White/Caucasian (94%). Lastly, 89% reported that they were currently employed. Of those not employed, all indicated that they had been previously employed part- or full-time.

The total sample (N=120) was heterogeneous with respect to gender, race, ethnicity, age, and work experience. Additionally, the majority had computer and computer game/simulation experience. The demographics of the total sample are presented in Table 2.

Table 2
Study Sample Demographics

Characteristic	*M*	*SD*	%	*n*	*N*
Gender					120
Female			68%	82	
Male			32%	38	
Age				118	
Years	28.85	8.10			
Race/Ethnicity				119	
Asian/Pacific Islander			14%	17	
Black/African American			14%	17	
Hispanic/Latino/Chicano			15%	18	
Native American/Indian			49%	58	
White/Caucasian			8%	9	
Other					
Currently Employed					120
No			12%	14	
Full-time			55%	66	
Part-time			33%	40	
Ever Employed If Not Currently					120
No			0%	0	
Yes			100%	14	
Held a Supervisory Position					120
No			53%	64	
Yes			47%	56	
Computer Experience					120
No			4%	5	
Yes			96%	115	
Game/Simulation Experience					120
No			25%	30	
Yes			75%	90	

Participation in the research was voluntary. Participants in the industrial/organizational classes received extra-credit points toward their final grade in return for their participation.

Sixty-one of these participants were randomly assigned to a high-ability condition, and 61 were randomly assigned to a low-ability condition. This was accomplished by pre-numbering questionnaires and assigning individuals with an odd number to the low-ability condition and assigning individuals with an even number to the high-ability condition.

Because of missing scale information and outliers, two participants were excluded from the data analysis (one from each ability group), resulting in a sample size of 120.

Approval to use human subjects in research was granted by the Institutional Review Board at the author's home campus and a copy of the approval is provided in Appendix A.

Procedure

The experiment was completed in two parts. In the first part, participants gave consent (Appendix B), provided demographic information (Appendix C) and completed self-report measures of their implicit theory of decision-making ability (Appendix D), goal orientation in the work domain (Appendix E), self-critical tendency (Appendix F), and managerial effectiveness skills (Appendix G). In the second part, they partook in a business decision-making simulation and answered questions on self-efficacy (Appendix H), affect (Appendix I), and intrinsic motivation (Appendix J). Upon completion of the simulation, participants met with a researcher. At this time participants verbally answered questions about the experiment, which served as a manipulation check. Lastly, the researcher fully debriefed participants. The experiment was conducted in two parts to

assuage suspicions about the true purpose and hypotheses of the study. The details are described below.

Participant solicitation and introduction to the experiment. The researcher introduced the study to Sample A at the beginning of a regular class period and then later explained the details by phone. The experiment was introduced and explained to Sample B by the course instructors. Participants in Sample C were contacted by phone and informed about the study by the researcher. The following script was followed:

> *I'd like to talk to you about a Management Research Study being done here at the college. This study is an investigation on decision-making in work settings. Decision-making is an important part of any manager's job, whether the decisions made pertain to prioritizing work, making work assignments, or employee relations. This particular study has two purposes: (a) To find out what people think of some recently developed questionnaires, and (b) to see how people react to a new computerized management decision-making simulation. What we mean by this type of simulation is that a manager's job is recreated on the computer and the person participating in the simulation plays the role of the manager. Although the organization and the job are fictitious, this simulation is modeled after an actual organization and is quite real. Simulations are used extensively in business schools and major corporations to train managers.*
>
> *We are looking for people to participate in this study. Participation has potential value for you as a participant in that it leads to self-awareness and you can acquire new knowledge and skills from the task. Further, this knowledge and*

skills can be applied to your work, regardless of type of work, position, and industry.

Participation consists of two parts. The first part involves reading and signing a consent form and filling out some brief questionnaire to satisfy the first purpose of the study. The second part will be scheduled when you hand in the questionnaire and completed at a later time that is convenient for you. Part II can be scheduled during the day, evening, or Saturdays. This part involves working on a computer during which time you will: (a) Serve as managers of a simulated organization; and (b) answer several questions about your reaction to the simulation. This part will take approximately two hours of your time.

It is important for you to know that the information you provide in the study is anonymous and held confidential. Your name will not be attached to any of the information you provide. Although you are asked to sign and return a consent form, it will be stored separately from the questionnaires you complete and the simulation information.

When you take a questionnaire packet, you will see that there are two identical copies of the consent form. One copy is for you to keep for your own records and the other is for you to sign and return to me along with the questionnaires. You will also see that there is an ID# on the consent form and questionnaires. This ID# is necessary in matching your data from Part I and II. Also, should the pages in your packet become separated, an ID# ensures that we do not lose any of your data. This number is a random number that will be used for identification purposes only.

Lastly, In responding to the items in the questionnaire, be thoughtful, but do not spend too much time on each one. In general, 'go with your gut' - don't evaluate your responses or try to choose the responses you think are most appropriate and make you look a certain way.

I thank you in advance and hope that participation in this study is a rewarding learning experience for you.

When participants arrived for Part II of the study, the researcher explained the activities with the following statement:

I know you've heard this before, but again, this study is a management research study on decision-making. During the next two hours, you will fill out three short questionnaires, answer some questions verbally, and work on a computerized management simulation as a manager. What we mean by this type of simulation is that a manager's job is recreated on the computer and the person participating in the simulation plays the role of the manager. Although the organization and the job are fictitious, this simulation is modeled after an actual organization and is quite real. Your role in the simulation is to act as a nurse manager and your sole task is to create the weekly registered nurse schedules. Participation in the simulation has potential value for you in that you can acquire new knowledge and skills from the task that you will be able to later apply to your work, regardless of what you do.

At this time the ability manipulation was introduced through bogus feedback. Participants were presented with the 'results' of the 20-item Managerial Effectiveness Skills Inventory (MESI) they completed in Part I (See Appendix G). They were told:

Before you begin the simulation, I'd like to give you some feedback on one of the questionnaires you filled out in Part I. The MESI reliably assesses management ability, including decision-making, and it is a good predictor, or indicator, of how people will perform on a decision-making task like the one you will be working on today.

Half the participants received high ability feedback, while the other half received low ability feedback. In the high ability condition, participants were informed:

You performed very well on the MESI. In fact, you performed better than most people do. This shows that you currently have high decision-making ability. You should do well on this simulation.

In the low ability condition, participants were informed:

You did not perform very well on the MESI. In fact, you did not perform as well as most people do. This shows that you currently have low decision-making ability. You may not do very well on this simulation.

Participants were then escorted to a computer to work on the simulation and to fill out the self-efficacy measure. They were told:

____ is your four-digit code to enter as an identification number in the computer (the number assigned in Part 1 of the study). Again, you will be acting as a nurse manager and your only task is to create the weekly registered nurse schedules. A more detailed description of the job and instructions for creating the weekly schedule will be presented on-screen.

Please note that after you read the directions, you are prompted to create your first schedule. This schedule represents the practice trial and you should try to only spend about 15-20 minutes on it so that you are familiar with the keyboard, the icons, and other technical aspects of the simulation. Try not to be concerned with creating a complete and perfect schedule. When you are comfortable with how the simulation works, move on to the real trial and try to create a schedule that meets all the regulations and satisfies all criteria. You have scrap paper here if you need it in creating a schedule.

Do you have any final questions or concerns? Go ahead then and get started. I will check up on you in a little while to make sure everything is okay. At that time I will pick up this questionnaire which I'd like you to fill out now before you start the simulation.

After 25-30 minutes, the researcher checked on the participants to collect the self-efficacy measure and to make sure that they had moved on to the real trial. Any questions

about the simulation were also answered at this time. Participants were asked to return to the office in which they first met the researcher when they had completed the schedule and answered 12 questions on screen. Although these questions were not part of the present study, they were included for the simulation developer's research purposes.

When participants returned to the office, they were asked to fill out the affect and intrinsic motivation questionnaires while the researcher checked on the computer and shut down the simulation program. When the researcher returned, she verbally asked participants eight manipulation check questions to determine whether they understood the information presented in the study and whether they were suspicious about the manipulation.

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At this time, participants were fully debriefed with the following:

Now that you've finished all the components of the study, I'd like to tell you about the true purpose of the study, because it is more involved than I first told you. First, I'd like to give you a little background to help you understand where the study is coming from.

This study stems from research on how people react to obstacles, challenges and failure. It has been found in many studies of children and adults that people have what are called implicit theories or self-concepts about their abilities. Either you see a particular ability (e.g., intelligence) as a fixed, uncontrollable entity (i.e., entity theory) that you cannot really change or as a malleable, controllable quality (i.e., incremental theory) that can be improved and expanded. How you see this

ability determines what goals you adopt in a challenging and/or failure situation. If you hold an incremental theory, you will adopt a learning goal in a failure/challenging situation. This means that you will focus on increasing your ability and developing new skills. If you hold an entity theory, you will adopt a performance goal in which you look to validate or document the adequacy of your ability. Depending on which theory you hold, we would expect very different reactions to failure. An entity theorist would believe that this "proves" they don 't have this ability and so why bother – thus, you would see their performance decline, their mood deteriorate, etc. An incremental theorist would look at this failure as a learning experience from which to develop and you would not see these same kinds of negative reactions to failure.

In this study, we are looking at people 's reactions to a negative situation based on their implicit theory or self-concept of their decision-making ability, their general goal orientation (performance vs. learning), and how critical they are about themselves. Basically, in a nutshell, we hypothesized that people who hold an entity theory and a performance goal, and who tend to be critical about themselves would not perform as well as those who hold an incremental theory and a learning goal, and who are not self-critical. We also thought these people would have lower expectations about how they would perform in the simulation, be in a worse mood after the simulation, and enjoy the simulation less.

So, in Part I, Questionnaire A measures your theory about whether decision-making ability is something that can be changed or something that is pretty stable. Questionnaire B measures whether you tend to adopt performance goals or

learning goals in your work. Questionnaire C measures how critical you tend to be about yourself, especially when things go wrong. The demographics help us explain results if anything looks strange when we analyze the data. For example, did people's age or occupation have an effect on how people answered questions?

A key component of the study is the effect of low and high-perceived ability. So, when you arrived for Part II today, I "experimentally induced" this by giving you false information. You were told that the Managerial Effectiveness Skills Inventory you completed in Part I was a measure of your general management ability and that it was a good indicator of how you would perform in the simulation. Half our study participants are being told that they have low ability and the other half are being told that they have high ability. In reality, this measure is bogus and does not measure anything. I want to stress that in no way does this questionnaire say anything about any management abilities you may have. The point of the feedback was simply to study how you reacted to it. The group to which you were assigned (high or low ability) was randomly determined and not at all influenced by your performance. In fact, identification number determined it. That is, questionnaires were pre-numbered and participants with even id numbers receive high ability feedback, while participants with odd id numbers receive low ability feedback.

I then measure participants' reactions. The first questionnaire measures your expectations on how you thought you would do in the simulation. In the simulation your performance is automatically calculated – that is, did you meet federal

guidelines, work within budget, and satisfy the nurses? At the end I measure your mood and how much you enjoyed the simulation (i.e., intrinsic motivation).

The questions I asked you verbally comprise what is called a manipulation check. The point of these questions is to determine whether you understood the directions and feedback you received and whether you guessed the hypotheses and true purpose of the study.

Now that I've done so much talking I'd like to ask you if you feel comfortable about the nature and purpose of the study. Do you have any questions, concerns or comments about the experiment or any related issue(s)?

Participants were questioned about the impact the ability manipulation may have had on their self-impressions and they were given the opportunity to talk through these perceptions, thoughts, and associated feelings. The researcher also asked participants if they understood the nature and purpose of the deception and if they had any questions, concerns or comments about the experiment or any related issue(s). When the participant reassured the experimenter that he/she felt good about his/her performance, the experiment, and themselves he/she was thanked for his/her participation. It was believed that this process would ensure that there would not be any long-term impact of false feedback and deception (cf. Ross, Lepper, & Hubbard, 1975).

When the researcher had answered all questions and issues, participants were given a written description of the study (see Appendix K) and told:

I have a written description of the study for you to take with you that includes information on its theoretical background, the questions it was designed to answer, and its applicability to work settings. Some references are also included. Lastly, if you are interested in receiving a copy of the study results when they are available, please provide me with your name and address.

Thank you for your participation. I know this was a big time commitment. I hope you found it to be an interesting and valuable learning experience.

Measures

The measures used in the study are described in detail below. They are presented in the same order as they were presented to participants. The psychometric properties obtained in the present study are included. A summary of the instruments, including the variables they measure, the number of items they contain, the scoring procedure used, score interpretation, descriptive statistics, and reliability is presented in Table 3.

Implicit Theory of Decision-Making. Implicit theories of business decision-making ability were measured with three items adapted from Dweck, et al.'s (1995) Implicit Theories Measure (See Appendix D). The statements were negatively or entity worded so as to avoid the compelling or socially desirable nature of positively or incremental worded statements (Levy, Stroessner, & Dweck, 1998). The statements are accompanied by a 6-point Likert-type response scale, ranging from 1 (strongly agree) to 6 (strongly disagree).

Table 3
Instrument Summary Information, Descriptive Statistics, and Reliabilities

Instrument	Variable Measured	# Items	Scoring Method	Higher Score Interpretation	*M*	*SD*	α
1. Implicit Theory of Decision-Making	Incremental or entity theory of decision-making	3	Average items	Incremental oriented	4.53	1.08	.83
2. Work-Domain Goal Orientation	One's dispositional tendency to develop or validating ability	13	Difference score[1]	Learning oriented	1.79	1.08	.80[2]
a. Learn Subscale	Learn dimension	5	Average items	Higher Learn dimension	5.10	.60	.79
b. Prove Subscale	Prove performance dimension	4	Average items	Higher Prove dimension	3.99	.98	.75
c. Avoid Subscale	Avoid performance dimension	4	Average items	Higher Avoid dimension	2.83	1.05	.81
3. Self-Critical Tendency	Self-critical and self-defeating processing of self-relevant info.	13	Sum items	More Critical Overall	52.12	10.90	.88
a. Negative Self-processing	Negative self-processing	8	Sum items	More negative self-processing	32.09	8.05	.86
b. Failure in Positive Self-Processing	Failure in positive self-processing	5	Sum items	Greater failure to positively self-process	20.03	4.30	.76
4. Self-Efficacy	Expectations about simulation performance	5	Sum items	Higher expectations	19.03	3.62	.90
5. Affect	Affects associated with success	8	Average items	More positive affect	3.26	.96	.93
6. Intrinsic Motivation	Simulation task enjoyment	5	Average items	Greater task enjoyment	5.77	1.33	.91
7. SimNurse Performance	Shifts which violate federal regulations[3]	4	Average items	Lower performance	7.51	4.54	.83

Note. [1]The difference score is calculated by subtracting the response average for the avoid and prove scales from the learning scale. [2]This represents the reliability of a difference score based on Crocker and Algina (1986). [3]This includes the number of shifts in which the: (a) number of nurses is too low, (b) number of nurses is too high, (c) nurse experience level is too low, and (d) nurse experience level is too high.

In previous studies, Dweck has scored this questionnaire by averaging scores across the three items to form an overall implicit theory score (ranging from 1 to 6), with a higher score indicating a stronger incremental theory. Individuals with an overall implicit theory score of 3.0 or below are classified as entity theorists and those with a 4.0 or above are classified as incremental theorists. Individuals who fall in between these two scores are excluded to ensure that only individuals with clear, distinguishable implicit theories are included. This criterion generally eliminates 15% of study participants, with the rest of the participants evenly split between the two theories.

The measure's reported psychometric properties are good. According to Dweck et al. (1995), it has high internal reliability across domains: implicit theories of intelligence (α ranged from .94 to .98), implicit theories of morality (α ranged from .85 to .94), and implicit theories of the kind of person one is (α ranged from .90 to .96). Test-retest reliability is also strong, ranging from .94 to .98.

According to Dweck, et. al. (1995), factor analysis of the items in each domain showed that there is independence between the domains and that there are three separate factors. It also showed that agreement with the statements did not represent an acquiescence set. Implicit theories measures were also shown to be: independent of respondents' sex, age, and political affiliation; not confounded with self-presentation concerns as represented by social desirability and self-monitoring; and unrelated to cognitive ability, confidence in intellectual ability, self-esteem, optimism, authoritarianism, and political conservatism or liberalism.

Dweck's dichotomous representation of the construct was not used here because the empirical evidence does not seem strong enough to justify it. Other researchers have

found that the majority of participants score 4.0 and above (e.g., Schwaeger, 1997; VandeWalle, D., personal communication, November 30, 1998). They also question whether this construct is better conceptualized as a dichotomy.

In the present study, the distribution was clearly positively skewed (M = 4.53, SD = 1.08). According to Dweck's classification, 65% of the participants are incremental theorists, 16% are entity theorists, and 18% do not fall into either category. Thus, the implicit theories variable was measured as a continuous variable, with a higher score representing a more incremental view of decision-making (M = 4.53, SD = 1.08). An exploratory factor analysis (using the principal components method for the initial solution and the direct oblimin method of oblique rotation to obtain an interpretable structure) revealed a one-factor solution ($\lambda_1 = 2.23$). Reliability, although lower than that reported by others, was very good ($\alpha = .83$).

Work Domain Goal Orientation. Goal orientation was measured with the Work Domain Goal Orientation instrument, developed by Vandewalle (1997) to measure an individual's disposition toward developing or validating his/her ability in work-related achievement settings (see Appendix E). Participants indicated the extent to which they agreed with a statement on a Likert-type response scale that ranged from 1 (strongly agree) to 6 (strongly disagree). This instrument is different from previous goal orientation measures in that it incorporates the trichotomous framework recommended by researchers: learning (5 items), performance-approach or prove (4 items), and performance-avoid (4 items). Also, whereas most instruments were developed for the academic domain and adapted for work settings, this instrument was specifically designed to measure goal orientation in a work domain.

Items were reverse scored, then summed and averaged across each of the three subscales to represent each of the three goals. Thus, a higher score indicated a higher orientation in each dimension. Vandewalle (1997) reports that a confirmatory factor analysis revealed that this solution is a superior fit than either a one- or two-factor model. His reported Cronbach's alpha for each of these subscales was very good (α = .89 for learning, α = .85 for Performance-Approach or Prove and α = .88 for Performance-Avoid).

According to Vandewalle (1997), as expected, the instrument was negatively related to the Fear of Negative Evaluation Scale. The three subscales correlated in the predicted pattern with the three corresponding achievement motivation subscales (mastery, work, competitiveness) of the Work and Family Orientation questionnaire (mastery and learning, r = .60; mastery and avoid, r = -.44; and prove and competitiveness, r = .45).

VandeWalle and Cummings' (1997) difference score, termed a dominant goal orientation was also computed. This difference score, which had a value range of 5 to –5, was calculated by subtracting the response average for the avoid and prove scales from the learning scale. A positive value meant that the participant's average on the learning scale was greater than the average of the two performance scales. A negative value meant that the participant's average for the two performance scales was greater than the average on the learning scale. VandeWalle and Cummings also conducted a median split of this dominant goal orientation to determine if there were differences between the two groups in feedback-seeking behavior.

In the present study, reliability was considerably lower than that reported by VandeWalle, but still adequate: Dominant Goal Orientation (α = .80); Learn (α = .79);

Prove (α = .75); and Avoid (α = .81). An exploratory factor analysis (using the principal components method for the initial solution and the direct oblimin method of oblique rotation to obtain an interpretable structure) supported previous research, revealing a three-factor solution (λ_1 = 3.59, λ_2 = 2.59, (λ_3 = 1.69).

Self-Critical Tendency. Self-critical tendency was measured using the 13-itme Self-Critical Cognition Scale developed to measure a self-critical and self-defeating cognitive tendency in processing self-relevant information (Ishiyama & Munson, 1993).

These items, listed in Appendix F, are rated on a 6-point Likert-type response scale, ranging from 1 (strongly agree) to 6 (strongly disagree). With respect to structure, factor analysis showed that the scale can be divided into 2 subscales, negative self-processing and failure in positive self-processing (Ishiyama & Munson, 1993). Their reported Cronbach's alpha for the entire scale and the two respective subscales are very good (α = .89, α = .86, α = .77). Internal consistency is almost identical in the present study (α = .88, α = .86, α = .76).

Ishamaya and Munson showed that the scale is a valid instrument. In a criterion-related validity study, the scale had high positive correlations with the Beck Depression Inventory, Social Avoidance and Distress Scale, the Fear of Negative Evaluation Scale, and the Shyness Scale. The correlation was lower with Social Desirability. As expected, it was negatively related to Rosenberg's Self-Esteem Inventory.

Managerial Effectiveness Skills Inventory. The ability manipulation was introduced through bogus feedback on the 20-item Managerial Effectiveness Skills Inventory (MESI) they completed in Part I of the study (See Appendix G). Participants respond to the 20 items by indicating whether each statement is true or false. Participants were presented

with the results of their performance on the MESI and told that MESI reliably assesses managerial skills, particularly decision-making ability and that it is a good predictor of performance in decision-making situations. The statements in the MESI concern managerial strategy and were constructed by Heilman, Kaplow, Amato, and Strathatos (1993) in order to place participants into experimental conditions (i.e., preferential vs. merit-based selection for the role of manager). Although MESI is a bogus measure, the scale developers report that it does have face validity. Because this measure was not used in any of the statistical analyses in the present study, psychometric properties were not obtained.

Demographics. Participants answered 11 questions about themselves, which included their sex, age, race/ethnicity, education, work experience, and computer experience (See Appendix C). These questions are important not only because they provide information necessary for generalizability of results and study replication, but they may also be covariates that can help explain confusing or unexpected results. For example, Dweck and her colleagues (Dweck & Bush, 1976; Dweck, et al., 1978; Dweck & Gilliard, 1975; Dweck, et al., 1980; Licht & Dweck, 1984) have consistently found sex differences in reaction to failure. Girls are more likely to exhibit the helpless response in response to failure and to attribute that failure to low ability and not to motivational factors such as effort and strategy.

Self-Efficacy. The self-efficacy measure used consists of five questions taken from the Self-Leadership Questionnaire that was created by the developers of the Superleadership Strategies II. The items are rated on a 5-point Likert scale, ranging from 1 (definitely not true) to 5 (very true). These items, presented in Appendix H, were

summed to form an overall scale of self-efficacy. A higher score represented stronger self-efficacy. In a pilot study, the items loaded on a single factor and the alpha coefficient was .83 (N=395). The present study also revealed a one factor solution ($\lambda_1 = 3.61$) and an even stronger reliability coefficient ($\alpha = .90$).

Task measures. The business decision-making simulation used, SimNurse, provided the task performance measure for the study. It was developed by Liu and his colleagues (1996) for the purpose of examining managerial effectiveness, attitudes, beliefs, goal-directed behavior, and feedback seeking on complex managerial behavior. The complex, dynamic, and uncertain simulated environment, contains multiple goals, constituencies, sources of information, and action.

As stated earlier, the simulation participant plays the role of a nurse manager in a hospital ICU. Although nursing is traditionally seen as a predominately female occupation, the simulation developers have tested the simulation extensively with males and females and report that there are no sex differences with respect to simulation realism, task involvement, and task enjoyment (Liu, et al., 1996).

Participants' only task in the simulation is to create the weekly schedule for the 13 subordinate nurses (male and female) in the unit. The task is done on a weekly basis for the nurses, with a workweek starting and ending midnight on Sundays. The participant has discretion in assigning the number of shifts and hours within the shift (i.e., eight or twelve) for each nurse. In creating the schedule, the participant must satisfy the needs and preferences of the administration and the nurses. Thus, while there is only one task, it is a complex situation in that the task involves interactions with incumbent nurses and the awareness of floor performance, budgets, hospital policies, and federal regulations. In

addition, there are meetings, emergencies, rounds, and other contingencies that compete for the participant's time while completing the task.

To ensure that all participants received the same task description and instructions and that there was no variation or experimenter influence, the simulation introduction was presented to participants on an opening screen (Liu, et al., 1996):

> In this simulation you will play the part of a nurse manager in an intensive care unit (ICU) at Fairview Hospital, a medium-size hospital. You have just begun working at Fairview, having moved from another city. In this version of the program, your main task is to schedule the registered nurses (RNs) you have working with you. The program provides an easy way to do this and keeps track of your schedules for you. Specifically, you will staff the ICU for weekly periods based on information available to you regarding preferences, hospital policy, federal regulations, and whatever other information you want to consider. While you are scheduling, the hospital continues to run in its demanding way. You will need to go on morning rounds, make scheduled meetings, see patients, and handle emergencies and other contingencies as they happen. These events are not simulated in the program, but they will take time away from your day.

The participants are then oriented to the task onscreen by their predecessor "Pat" who outlines the job and task to them. They are given a summary of the nature of time available to them (i.e., virtual and real) and the events that compete for their time and take

them away from the task. In addition, they are given summaries of the 13 nurses in the unit whom they will be scheduling.

Following the introduction, the participant (i.e., nurse manager) is shown to his/her office. Once there, different information is accessible to him/her. First, the scheduling program with the schedule of the previous week is available. Time is indicated on a clock and regularly scheduled events for the week are indicated on a calendar. 'Personnel files', presented in Table 4, on each of the 13 nurse subordinates (i.e., background information includes seniority and experience levels; day, night, or evening shift preferences; eight vs. twelve hour preferences; total weekly hours and overtime hours desired; and weekend availability) are available. Lastly, there is an in-basket containing specific nurse requests that are temporary changes to their preferences in their files. This information is accessible to the participant throughout the simulation and his/her use of the information is actually tracked throughout the simulation.

Table 4
Nurse Personnel Files

Nurse	Exp. Level	Pay/ Hour	Over-time	Rotation	Days	Week-Ends	Total Hours	12hr Shifts	Same Day
Arlene	3.16	$34.61	4	Day	5	1	40	3	0
Kevin	2.42	$30.37	0	Evening	5	1	40	1	0
Paul	2.26	$28.40	0	Night	5	2	40	1	0
Robert	1.76	$23.82	4	Day	5	2	40	1	0
Hanna	1.62	$24.18	0	Day	5	2	35	0	0
Mona	1.30	$20.91	2	Eve	6	3	35	0	0

One of the nurse manager's goals in the simulation is to accommodate nurse preferences regarding rotation, shift preferences, number of hours in a shift, total weekly hours desired, overtime hours desired, and weekend availability. Any discrepancies between preferences and schedules submitted by the participant results in performance errors and complaints by nurses.

In addition to satisfying the nurses, the participant must also satisfy the administration, who oversee the nurse manager, control the budget, and ensure adherence to federal guidelines. The administration is interested in whether the schedule falls within budget (determined by pay rates and overtime hours). It must ensure, according to federal guidelines, that there is a minimum of three nurses and a maximum of five nurses per shift and that an average level of experience, five to seven years, per shift is maintained. In addition, the administration oversees the "manager's job as a whole" and would like to see the schedule completed in a timely manner. Quickly developed schedules signify that other duties were performed well because time was available. Thus, in evaluating schedules submitted by the participant, the administration monitors the budget goals, nurses' experience level, shift coverage, and timely schedule completion. These all impact performance measures.

The issue of time is another important element of the simulation. In the simulation, real and virtual times are both occurring and are equally important. Virtual time is measured by the simulation clock that determines the passage of time in the simulation. All meetings and events, which are not part of the task and are not simulated on the computer, take virtual time, but not real time. That is, the time they take is reflected in the virtual clock, but not the real clock. For example, a weekly two hour Quality Control

meeting would take two hours from the virtual clock, but participants would not actually sit at the computer for two hours.

On the other hand, the scheduling task does take place in real time (the normal everyday passing of time). An hour spent scheduling is an hour spent at the computer. The passage of real time is also recorded in virtual time. So, this hour scheduling in real time also takes an hour away of virtual time. Table 5, taken from Liu, et al. (1996), outlines a typical nurse manager's day, which includes scheduled and random events.

Table 5
Example of a Nurse Manager's Daily Schedule

Event	Type	Start Time	Length (mins.)	Actual length	Description
Morning Rounds	Fixed	7:30 am	105	109	Checking mail, morning reports, staff meetings and patients
Phone Call	Random	9:31 am	10	11	There goes the telephone
Equipment Check	Fixed	10:00 am	60	60	Checking equipment functionality of the equipment
Budget Preparation	Fixed	11:00 am	60	60	Preparing for the budget meeting
Lunch	Fixed	12:00 p.m.	45	45	Lunch
Budgeting	Fixed	12:45 p.m.	75	78	The weekly budget meeting
Visitor	Random	2:04 p.m.	10	9	Someone is at your door
Visitor	Random	2:14pm	10	11	Someone is at your door
Telephone	Random	2:28 p.m.	10	7	There goes the telephone again
Evening Rounds	Fixed	4:00 p.m.	60	60	Evening patient rounds and end of day report
Leave	Fixed	5:00 p.m.	0	0	Go home and relax. Another day is done

Performance measure. For the present study, performance in the simulation was operationalized as the average number of shifts in which there were problems (i.e., the administration goals were not met). As described earlier, federal guidelines suggest that there are a minimum of three nurses and a maximum of five nurses per shift and that there are an average of five to seven years of experience per shift. Four items measure problems with shifts: (1) The number of shifts in which the number of nurses is too low; (2) the number of shifts in which the number of nurses is too high; (3) the number of shifts in which the average experience level of nurses is too low; and (4) the number of shifts in which the average experience level of nurses is too high. Performance was calculated as the average of these four items ($M = 7.51$, $SD = 4.54$). An exploratory factor analysis (using the principal components method for the initial solution and the direct oblimin method of oblique rotation to obtain an interpretable structure) revealed a one-factor solution ($\lambda_1 = 2.83$). Reliability analysis showed strong internal consistency ($\alpha = .83$).

Throughout the simulation, there is ongoing tracking of actions by the participant, including information sought, decisions made, and goals met. An enormous amount of data are generated in the simulation and stored in three separate data files for each participant. First, the subject data file includes the individual's name, identification number, and the time he/she spent on the simulation introduction. Second, the nurse data file contains 25 items or data points for each of the 13 nurses, which includes, for example, overtime error (discrepancy between nurses' goals for overtime and scheduled overtime) and consecutive days scheduled discrepancy. Third, the schedule data file includes approximately 50 items, including the amount of time the participant spent on each schedule submitted, the number of shifts without enough nurses, the number of times

personnel records were checked, how far over/under budget, and a 12-item self-efficacy scale (again, this is not part of the present study).

Affect. Thirteen affects, six known to be associated with success and six known to be associated with failure were presented to participants (Weiner, et al., 1979). They indicated the extent to which they were presently experiencing that emotion by using a 6-point Likert-type scale, ranging from 1 (not at all) to 5 (to a great extent). The scale items are presented in Appendix I. This guided recounting of emotional experiences is recommended by Weiner and his colleagues (1979), as participants do not generally have words available to describe their emotional reactions to experiences.

All 13 items were not included in the analyses for the present study because of the psychometric properties obtained. An exploratory factor analysis (using the principal components method for the initial solution and the direct oblimin method of oblique rotation to obtain an interpretable structure) revealed a three-factor solution ($\lambda_1 = 5.91$; $\lambda_2 = 1.88$; $\lambda_3 = 1.23$). The first factor, which contained eight items (calm, competent, confident, content, gratitude, happy, proud, and satisfied) seems to best represent positive affect and to be most related to success (Weiner, et al., 1979). They also seemed to be most relevant for the present study. Reliability analysis showed that the deletion of the five other items (excited, guilty, relief, surprised, thankful) improved alpha from .84 to .93. Thus, the variable Positive Affect was computed by averaging across these eight affects, with a higher score representing more positive affect or a better mood.

Intrinsic Motivation. A self-report measure of intrinsic motivation, operationalized as task enjoyment, was also obtained after participants completed the simulation (Elliot & Harackiewicz, 1994). This measure, presented in Appendix J, consists of five negatively-

worded statements and pertains solely to the enjoy factor. Participants used a 6-point Likert-type response scale, ranging from 1 (strongly disagree) to 6 (strongly agree) with each statement. The reported Cronbach's alpha was .83 (Elliot & Harackiewicz, 1994). Two negatively worded items (2 and 4) were reverse scored. All of the items were then reverse scored and summed to form an average, so that a higher score represented greater task enjoyment. Psychometric analyses revealed a one-factor solution ($\lambda_1 = 3.67$) and Cronbach's alpha of .91.

Manipulation Check. Participants were probed for suspicions regarding the measures used, the experimental purposes, and the study hypotheses with the following oral questions: (1) Were the instructions given in the experiment clear? If not, what was unclear, odd or confusing in the experiment?; (2) What was the feedback that you received about your management skills/ predicted simulation performance?; (3) What did you think about this feedback? How did it make you feel?; (4) Did you think that we were trying to make you feel a certain way by telling you about your performance and ability after completing the MESI?; (5) Did you think there may have been other purposes for part 1 of the study other than to find out what people think about some newly developed questionnaires?; (6) Did you think there may have been any other purposes for part 2 of the study other than to find out people's reaction to the new simulation?; (7) Did you think that Parts 1 and 2 were related to each other in any way?; and (8) Are there any other thoughts/questions/issues you have about this research study that we may have not discussed?

Chapter 9

Results

In this chapter all analyses of the present study data are presented, including preliminary analyses of the data distribution, manipulation check analyses, and hypothesis testing.

Preliminary Analyses

Extensive preliminary analyses of the data were conducted to determine: (a) The appropriateness of the planned statistical techniques to be used in hypothesis testing and model building; (b) whether any data need to be transformed so that distributions are approximately normal or group variances are similar; (c) whether nonparametric techniques were necessary; and (d) whether unexpected patterns or differences among groups, especially with respect to demographic variables, warrant controlling for or entering these variables in hypothesis testing or model building. This information is crucial in minimizing decision error, particularly Type II error.

Normality of Distribution. The t-test and F-test assume that the dependent variable are normally distributed. Regression analysis assumes only that the dependant variable scores are normally distributed along the regression line. It is generally sufficient to visually determine normality (i.e., histograms, stem-and-leaf plots, and boxplots). There is also a statistical test, the Lilliefors test (modification of the Kolmogorov-Smirnov test), to test the hypothesis that the data are from a normal distribution.

First, histogram and stem-and-leaf plots were examined to see how tightly cases clustered together, if there was a single peak or several peaks, and whether there were extreme values. The distributions for the individual difference variables of implicit theory, goal orientation, and self-critical tendency were examined. While goal orientation and self-critical tendency appeared to be normal, the implicit theory distribution was skewed to the right. Self-efficacy appeared to be normally distributed. The distributions for the outcome measures of affect, intrinsic motivation, and performance appeared to have a slight departure from normality. Affect appeared to have three peaks; intrinsic motivation was positively skewed; and performance had three peaks. However, this slight lack of normality did not warrant using less powerful nonparametric tests.

Second, to determine whether various groups of participants had different distributions for both the individual difference variables and the outcome variables, normal probability plots and detrended normal plots were examined. In normal probability plots, each observed value is paired with its expected value from the normal distribution. The points will, more or less, fall on a straight line if the sample is from a normal distribution. The detrended normal plot, in which the actual deviations of the points from a straight line are plotted, should also be observed. These points should cluster around a horizontal line through 0 and there should be no pattern if the sample is from a normal distribution. In addition, the Lilliefors test was computed.

The distributions for the following groups were observed: sex, age, race/ethnicity, educational level, employment status, supervisory experience, computer experience, simulation experience, sample source (students vs. nonstudents), goal orientation, and experimental condition (low ability vs. high ability). The variables included: (a) self-report

measures of implicit theory, goal orientation and the three subscales, self-critical tendency and the two subscales; (b) self-regulatory measure of self-efficacy; and (c) outcome measures of affect, intrinsic motivation, and performance. Most groups did not have different distributions for any of the variables. Individuals with computer experience had different distributions for intrinsic motivation than those without computer experience. However, these participants represent such a small percentage of the sample (4% or 5 individuals) that it did not justify using a nonparametric test. Likewise, individuals with simulation experience had a slightly different distribution for intrinsic motivation than those without simulation experience. Here too, the difference was not extreme enough to warrant using a less powerful nonparametric test.

Equality of Variance. Many statistical procedures, including t-tests, F-tests, and regression, require that all groups come from populations with equal variance. To test for homogeneity-of-variance, the Levene test was used. If the Levene statistic is significant and the assumption is violated, it may be necessary to use a power transformation, which raises each data value to a specified power, to stabilize the variances. This is first accomplished visually by observing a spread-and-level plot to see the relationship between the average value (level) of a variable and the variability (spread) associated with it. This will reveal the linear relationship between spread and level. Power is then obtained by subtracting the slope of that line from 1 (e.g., a power transformation of 3 cubes all of the data values). Once this power transformation is applied, it is necessary to observe the spread-and-level plot for the transformed data to see if the transformation has been successful.

The following group variances were tested: sex, age, race/ethnicity, education level, educational level, employment status, supervisory experience, computer experience, simulation experience, sample source, goal orientation, and experimental condition. The means for the following variables were compared: (a) self-report measures of implicit theory, goal orientation and the three subscales, self-critical tendency and the two subscales; (b) self-regulatory measure of self-efficacy; and (c) outcome measures of affect, intrinsic motivation, and performance. It was found that some variances were not homogeneous. Sample source, experimental condition, simulation experience, and race/ethnicity group variances were heterogeneous with respect to affect and intrinsic motivation. Computer experience and ethnicity were heterogeneous with respect to self-efficacy. Power transformations were considered. However, since power was close to 1 on the above, it did not justify applying a transformation. In addition, ANOVA and regression are robust with respect to homogeneity of variance.

Independence. This important assumption underlying t-tests and F-tests is that the scores or observations are independent of each other. This was accomplished in the present study by randomly assigning participants to the high- or low ability condition.

It should be noted that the F-test is generally robust with respect to homogeneity and normality assumptions, provided independence assumption is met. However, there may be a problem if one group is larger than another by a ratio of at least two to one and one variance is larger than another by a ratio of at least four to one.

Variability/patterns in data. A series of independent-samples t-tests and one-way ANOVAs were conducted to determine whether there were statistically significant differences in group means for the various self-report measures and outcomes. The

groups for which the means compared are: sex, age, race/ethnicity, supervisory experience, computer experience, simulation experience, sample source, and experimental condition. If there were differences, it would be necessary to control for these differences in subsequent analyses. The following variables were compared: (a) self-report measures of implicit theory, goal orientation and the three subscales, self-critical tendency and the two subscales; (b) self-regulatory measure of self-efficacy; and (c) outcome measures of affect, intrinsic motivation, and performance. The means and standard deviations are summarized in Table 6.

Few statistically significant differences were found. No differences were found among the means of any racial/ethnic group or educational level for any of the scales or outcomes. The only sex difference found was that women had a lower learning orientation than men did (5.13 vs. 5.38, $t = 2.16, p < .05$) and that men had a lower avoid-performance orientation than women (2.55 vs. 2.96, $t = 2.01, p < .05$). The only age difference was that younger participants (19 - 22 years of age) reported greater intrinsic motivation than older participants (31 - 40 years of age) (2.78 vs. 1.88).

There were several sample source differences. Students reported higher self-efficacy (19.53 vs. 17.76, $t = 2.28, p < .05$), positive affect (3.39 vs. 2.92, $t = 2.50, p < .05$), and intrinsic motivation (6.10 vs. 5.60, $t = 2.44, p < .05$) than non-students.

There were also computer and simulation experience differences. Those without computer experience reported higher intrinsic motivation than those with computer experience (6.56 vs. 5.74, $t = 2.89, p < .05$). Likewise, those without simulation experience reported higher intrinsic motivation than those with simulation experience (6.3 vs. 5.6, $t = 3.38, p < .01$).

Table 6
Descriptive Statistics for Variables in the Study

Variable		*Sample Source*		*Condition*		*Sex*		*Age*			
		Student	Non Student	High Ability	Low Ability	Female	Male	19-22	23-30	31-40	41-53
1. Implicit Theory	*M*	4.44	4.74	4.56	4.49	4.52	4.54	4.44	4.53	4.63	4.52
	SD	1.10	1.02	1.15	1.01	1.09	1.08	1.05	1.19	1.00	1.09
2. Goal Orientation	*M*	1.71	2.03	1.87	1.72	1.65	1.95	1.56	1.95	1.84	1.88
	SD	1.06	1.11	1.06	1.10	.96	1.27	1.18	1.04	1.07	1.05
3. Learn	*M*	5.17	5.29	5.24	5.17	5.13	5.38	5.22	5.23	5.21	5.19
	SD	.61	.59	.60	.62	.59	.61	.64	.61	.63	.52
4. Prove	*M*	4.11	3.69	3.95	4.04	3.99	4.00	4.46	3.80	3.84	3.73
Performance	*SD*	1.01	.84	1.01	.97	.94	1.08	1.01	1.00	.77	1.04
5. Avoid	*M*	2.83	2.85	2.79	2.88	2.96	2.55	2.87	2.75	2.89	2.88
Performance	*SD*	1.10	.94	1.10	1.02	.99	1.15	1.12	1.12	.94	1.10
6. Self-Critical	*M*	51.63	53.35	53.65	50.58	51.45	53.55	50.00	53.4	51.84	54.36
Tendency	*SD*	11.26	10.11	10.90	10.84	11.06	10.65	10.36	10.65	12.06	11.52
7. NSP subscale	*M*	31.67	33.15	33.35	30.83	31.63	33.08	30.24	33.10	32.00	33.36
	SD	8.23	7.60	7.33	8.60	8.18	7.80	7.99	7.48	8.79	8.55
8. FPSP subscale	*M*	19.95	20.21	20.30	19.75	19.82	20.47	19.76	20.26	19.84	21.00
	SD	1.53	3.73	4.60	4.00	4.35	4.22	4.13	4.60	4.06	4.72
9. Self-Efficacy	*M*	19.53	17.76	19.85	18.22	19.13	18.81	19.12	19.31	19.32	16.79
	SD	3.35	4.00	3.18	3.87	3.49	3.92	3.51	3.57	3.70	3.24
10. Positive Affect	*M*	3.39	2.92	3.51	3.01	3.20	3.39	3.35	3.19	3.29	3.13
	SD	.78	1.26	.75	1.08	.94	1.01	.80	.94	1.04	1.28
11. Intrinsic	*M*	5.63	6.12	6.14	5.41	5.91	5.46	5.22	5.95	6.12	6.19
Motivation	*SD*	1.50	.66	1.08	1.46	1.18	1.59	1.76	1.20	.81	.47
12. Shift Problems	*M*	7.65	4.89	8.37	8.37	7.82	6.87	7.42	7.99	6.56	7.32
	SD	7.17	3.52	4.74	4.74	4.56	4.47	4.68	5.05	3.86	2.80

Table 6 (continued)
Descriptive Statistics for Variables in the Study

Variable		*Race/Ethnicity*					*Supervisory Exper.*		*Computer Exper.*		*Simulation Exper.*	
		Asian	Black	Hispanic	White	Other	No	Yes	No	Yes	No	Yes
1. Implicit Theory	*M*	4.15	4.20	4.80	4.58	4.78	4.50	4.56	4.53	4.52	4.72	4.46
	SD	1.02	1.50	.93	.99	1.00	1.07	1.10	.84	1.09	.98	1.11
2. Goal Orientation	*M*	1.71	1.45	1.69	1.92	.76	1.77	1.82	1.51	1.81	2.04	1.71
	SD	.86	.91	.89	1.16	1.51	1.10	1.07	.93	1.09	1.05	1.08
3. Learn	*M*	5.28	5.09	5.04	5.26	5.24	5.17	5.25	4.68	5.23	5.21	5.21
	SD	.47	.60	.56	.60	.94	.64	.57	1.05	.58	.67	.58
4. Prove Performance	*M*	4.42	4.21	3.94	3.83	4.11	3.98	4.01	3.75	4.00	3.68	4.09
	SD	.62	1.04	1.07	1.00	1.00	.90	1.07	.47	1.00	.94	.98
5. Avoid Performance	*M*	2.70	3.03	2.76	2.85	2.86	2.83	2.84	2.60	2.84	2.65	2.89
	SD	1.26	1.10	.90	.98	1.44	1.03	1.08	.38	1.07	.87	1.10
6. Self-Critical Tendency	*M*	48.56	46.24	52.78	53.97	53.78	51.90	52.35	51.60	52.14	54.27	51.40
	SD	11.56	10.73	10.94	10.59	6.86	10.15	11.82	12.38	10.93	11.04	10.86
7. NSP subscale	*M*	29.13	27.29	33.17	33.51	33.22	31.83	32.39	30.60	32.16	33.97	31.47
	SD	9.94	8.17	6.97	7.46	4.79	7.57	8.62	10.88	7.97	7.52	8.17
8. FPSP subscale	*M*	19.44	18.94	19.61	20.46	20.56	20.08	19.96	21.00	19.98	20.30	19.93
	SD	4.16	4.96	4.97	4.02	3.97	4.27	4.38	3.00	4.35	4.36	4.31
9. Self-Efficacy	*M*	18.94	20.47	19.61	18.49	18.22	18.87	19.21	19.80	19.0	18.53	19.20
	SD	3.40	3.71	2.93	3.95	1.20	3.40	3.87	.45	3.69	3.48	3.67
10. Positive Affect	*M*	3.20	3.42	3.51	3.13	3.27	3.24	3.28	3.83	3.24	3.46	3.19
	SD	1.05	1.02	.64	1.05	.45	.93	1.00	.55	.97	.88	.98
11. Intrinsic Motivation	*M*	4.95	6.02	5.93	5.91	5.44	5.70	1.47	6.56	5.74	6.29	5.60
	SD	1.86	1.57	1.16	1.02	1.62	1.47	1.16	.57	1.34	.74	1.44
12. Shift Problems	*M*	7.67	7.99	8.75	6.68	9.56	8.27	6.68	10.75	7.37	6.82	7.74
	SD	5.08	4.26	5.41	4.11	4.77	4.74	4.19	6.52	4.42	3.91	4.73

Lastly, there were several experimental group differences. Those in the high ability condition reported higher self-efficacy (19.85 vs. 18.22, $t = 2.53, p < .05$), positive affect (3.51 vs. 3.01, $t = 2.94, p < .01$), and intrinsic motivation (6.14 vs. 5.41, $t = 3.11, p < .01$) than did those in the low ability condition. They also had fewer shift problems (6.66 vs. 8.37, $t = 2.09, p < .05$).

Manipulation Check

The manipulation check was content-coded to determine whether participants were suspicious about the measures used, the experimental purposes, and the study hypotheses. Ninety-five percent of participants believed the instructions given in the study were clear (Question 1).

Almost all participants (98%) correctly stated the ability feedback they had been given (Question 2). However, there was variability in how that feedback was recounted. Some participants gave more than one response. Of those in the high ability condition, some of the responses given were: (a) will do well on the simulation (59%); (b) scored very well (52%); (c) would make a good manager (14%); and (d) did better than the average person (8%). Of those in the low ability condition, some responses were: (a) would not do well on simulation (35%); (b) did not do as well as everyone else/ below average (16%); (c) scored low (12%); (d) have low ability (10%); (e) would make a lousy manager (10%); and (f) it was negative (6%).

There was also variability in what people thought about the feedback and how it made them feel (Question 3). Here too, some participants gave more than one response. Of those in the high ability condition, some responses were (a) didn't think much about it/

had no impact (30%); (b) validates my career choice (11%); and (c) didn't trust the test (7%). Of those in the low ability condition, some responses were: (a) didn't think much about it/ had no impact (40%); (b) told myself it wouldn't affect me (12%); (c) tend to be inconsistent in how I answer these kinds of questions (8%); and (d) it wasn't a good thing. Additionally, some of those in the high ability condition reported: (a) felt good about myself (30%); (b) felt confident (12%); (c) motivated to work on simulation (10%); and (d) happy (10%). Those in the low ability condition reported: (a) felt bad about myself (20%); (b) surprised (19%); (c) incompetent (15%).

Most of the participants in the low ability condition did not think that the researcher was trying to make them feel a certain way by telling them about their performance (Question 4; 85%). Only three people thought it was to see how they would react to the information. Sixty-three percent of the participants in the high ability condition did not think that the researcher was trying to make them feel a certain way by telling them about their performance. Of those in the high ability group who thought there was a purpose (22 participants or 37%), 90% thought it was to encourage them or motivate them to work on the simulation.

About 20% of participants thought there was an additional purpose of Part 1 of the study other than to find out what people think about some newly developed questionnaires (Question 5). However, about 40% thought there was another purpose for part 2 of the study other than to find out people's reaction to the new simulation (Question 6). Most people stated that the purposes may have been to: (a) evaluate people's performance in a management situation (40%); (b) see how people perform under stress (23%); or (c) see whether people can be trained to manage.

Most participants (80%) thought that Part 1 and Part 2 of the study were related to each other (Question 7). When probed on how they were related, some thought that Part I was questioning people on how they thought they would act as managers and that Part II was seeing how they would then act in a management situation (29%). Others thought that that both were about decision-making (19%) or management and management skills, but were not specific as to how (22%). Still others stated they knew the two parts were related, but did not know how (14%).

When asked if they had thoughts/questions/issues about the research study that may have not been discussed, most did not (Question 8; 75%). Of those that did, 25% stated that the simulation was fun or interesting and that they enjoyed their participation. Others focused on technical features of the simulation (40%). About 10% of participants stated that the simulation was very challenging and difficult.

Relationships Among Variables

A correlation matrix was computed to examine the relationships among all the variables: the individual difference variables (i.e., implicit theory, goal orientation, and self-critical tendency), self-efficacy, and the outcomes of affect, intrinsic motivation, and shift problems. Based on the preliminary analyses of statistical assumptions described earlier, the effects of some variables were controlled. The correlation values are reported in Table 7. As expected, correlations were strong and in the expected direction within scales (e.g., Learn and Avoid subscales, $r = -.77, p < .001$)

Surprisingly, although the Implicit Theory measure correlated with the four goal orientation scales in the expected patterns, the relationships were weak. The relationship

was positive and significant with the overall difference score (r = .19). The correlation was negative with both the Avoid subscale (*r* = -.17) and Prove subscale (r = -.19), but only significant with the latter. Further, the correlation was positive but nonsignificant with the Learn subscale (*r* = .05). The only other variable that had a statistically significant relationship with the implicit theory measure was the performance measure, shift problems (*r* = -.23).

Self-efficacy was negatively and significantly related to the Prove dimension of the Goal Orientation scale (*r* = -.20). It also had positive and statistically significant relationships with Self-Critical Tendency (*r* = .33) and its two subscales, Negative Self-Processing (*r* = .28) and Failure in Positive Self-Processing (*r* = .31). Further, it had a strong positive relationship with positive affect (*r* = .61).

As expected, positive affect had a significant negative relationship with the Avoid Subscale (r = -.22). Surprisingly, however, it was positively and significantly related to Self-Critical Tendency (*r* = .27) and its two subscales, Negative Self-Processing (*r* = .24) and Failure in Positive Self-Processing (*r* = .24).

Intrinsic motivation was not correlated with any measure. However, performance (shift problems) had strong relationships with several variables. As expected it was strongly and negatively related to Goal Orientation (r = -.83), and strongly and positively related to the Prove Subscale (*r* = .76) and Avoid Subscales (*r* = .80). It was unrelated to intrinsic motivation and positive affect.

Table 7
Descriptive Statistics and Intercorrelations Among Variables Used in Study

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Implicit Theory	4.53	1.08	(.83)											
2. Goal Orientation	1.79	1.08	.19*	(.80)										
3. Learn	5.10	.60	.04	.69***	(.79)									
4. Prove Performance	3.99	.98	-.19*	-.52***	.06	(.75)								
5. Avoid Performance	2.83	1.05	-.17	-.77***	-.32**	.22*	(.81)							
6. Self-Critical Tendency	52.12	10.90	.12	.15	.15	.08	-.21*	(.88)						
7. NSP subscale	32.09	8.05	.14	.18*	-.08	.00	-.27**	.94***	(.86)					
8. FPSP subscale	20.03	4.30	.03	.06	-.21*	.19*	-.05	.78***	.52***	(.76)				
9. Self-Efficacy	19.03	3.62	.02	-.03	.01	-.20*	.10	.33**	.28**	.31**	(.90)			
10. Positive Affect	3.26	.96	.05	.11	.07	.08	-.22*	.27**	.24**	.24*	.61***	(.93)		
11. Intrinsic Motivation	5.77	1.33	.07	.11	-.15	-.00	-.06	-.01	-.05	.07	-.02	.02	(.91)	
12. Shift Problems	7.51	4.54	-.23*	-.83**	.17	.76**	.80**	-.10	.18	.08	-.05	-.10	-.04	(.82)

Note. NSP = Negative Self-Processing Subscale. FPSP = Failure in Positive Self-Processing Subscale. Cronbach's α values are reported in parentheses on the diagonal, except for the Goal Orientation Scale, which is the reliability of a difference score based on Crocker and Algina (1986).
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Hypothesis Testing

Antecedents of goal orientation. The first set of hypotheses proposed that individuals' implicit theory of decision-making (entity vs. incremental) and the tendency to be self-critical are antecedents or determinants of goal orientation (performance-approach, performance-avoid, and learning). To test H_{1A} and H_{1B}, the enter method of multiple regression analysis was performed. No significant results were obtained for any of the goal orientations.

Subsequently, a series of stepwise regression analyses were performed to determine whether a model fit the data with either of the independent variables excluded. The results of these analyses are summarized in Table 8. For the learn orientation, neither of the variables appear to be good predictors. There are no significant *t* or *F* statistics and the adjusted R^2s are very small (.01 and .02). For the prove orientation, implicit theory was the only statistically significant predictor. Although the *t* (-2.58) and *F* (6.63) statistics were statistically significant, the adjusted R^2 was very small (.05). For the avoid orientation, critical tendency was the only statistically significant predictor, but again, although the *t* (-2.49) and *F* (6.62) statistics were statistically significant, the adjusted R^2 was very small (.04).

Table 8
Summary of Regression Analysis for Antecedents of Goal Orientation

Dependent Variable	Model	Independent Variable(s)	β	T	Adjusted R^2	F	dfs
Learning	1	Implicit	-2.96	.58	.01	.33	1, 118
	2	Implicit	-1.79	.35	.01	1.51	2, 117
		Critical	-8.34	1.60			
	3	Critical	-8.60	1.70	.02	2.93	1, 118
Prove	1	Implicit	-.22	-2.65**	.06	3.56*	2, 117
		Critical	-5.90	.72			
	2	Implicit	-.21	-2.58*	.05	6.63*	1, 118
Avoid	1	Critical	-2.20	-2.49*	.04	6.22*	1, 118

*$p < .05$. **$p < .01$.

Goal orientation and outcomes. It was hypothesized that in the low ability experimental condition, learning and performance-approach individuals would have about the same levels of affect, intrinsic motivation and performance, but that performance-avoid individuals would have lower scores (H_2). Each of the three subscales (learn, prove, avoid) are continuous variables. To test these moderator hypotheses using MANOVA, a median-split was conducted for each of the subscales to compare those higher and lower on each subscale. It was also possible to conduct a median-split of the dominant goal orientation difference score to compare those with a higher dominant goal orientation than those with a lower dominant goal orientation.

Thus, to determine whether there is a difference in reported affect, intrinsic motivation and, performance between individuals with a high dominant goal orientation

and individuals with a lower dominant goal orientation four MANOVAs were performed. The results, summarized in Tables through 12 were not significant.

Table 9
Summary of MANOVA Analysis for Goal Orientation and Outcomes

Dependent Variable	Goal Orientation Group	*M*	*SD*	*F*	df
Affect				.71	1
	High	2.91	1.18		
	Low	3.14	.97		
Intrinsic Motivation				1.29	1
	High	5.60	1.27		
	Low	5.17	1.66		
Shift Problems				.41	1
	High	8.73	4.61		
	Low	7.93	4.96		

Table 10
Summary of MANOVA Analysis for Learning Subscale and Outcomes

Dependent Variable	Goal Orientation Group	*M*	*SD*	*F*	df
Affect				.17	1
	High	3.23	1.33		
	Low	3.30	1.35		
Intrinsic Motivation				.02	1
	High	5.75	1.05		
	Low	5.79	.87		
Shift Problems				1.93	1
	High	6.94	4.34		
	Low	8.09	4.70		

Table 11
Summary of MANOVA Analysis for Prove Performance Subscale and Outcomes

Dependent Variable	Goal Orientation Group	*M*	*SD*	*F*	df
Affect				1.88	1
	High	3.37	.85		
	Low	3.13	1.08		
Intrinsic Motivation				1.88	1
	High	5.63	1.54		
	Low	5.96	.98		
Shift Problems				1.64	1
	High	7.05	4.43		
	Low	8.12	4.65		

Table 12
Summary of MANOVA Analysis for Avoid Performance Subscale and Outcomes

Dependent Variable	Goal Orientation Group	*M*	*SD*	*F*	df
Affect				3.68	1
	High	3.12	.98		
	Low	3.46	.90		
Intrinsic Motivation				2.12	1
	High	5.62	1.35		
	Low	5.98	1.28		
Shift Problems				3.24	1
	High	8.13	4.70		
	Low	6.64	4.19		

Mediator and moderator analyses of the relationship between goal orientation and outcomes. It was hypothesized that self-efficacy mediates the relationship between goal orientation and the outcomes of affect, intrinsic motivation, and performance (H_{3A}, H_{3B},

and H_{3C}). A path analysis was conducted to test the hypothesized causal ordering of variables and the overall structure of the model using the LISREL VIII path analytic technique (Jöreskog & Sörbom, 1993). The general model structure is theoretically and empirically driven and partly supported by findings in prior research (Bandura & Jourden, 1991; Bandura & Wood, 1989; Sujan, et al., 1994; Wood & Bandura, 1989). In this model, self-critical tendency and implicit theory determine goal orientation, which in turn influences self-efficacy, and which has a subsequent effect on affect, intrinsic motivation, and performance. The model explored the possible paths from the antecedent or exogenous variables leading to the endogenous variables. This procedure is a general maximum likelihood estimation procedure that provides a test of parameter estimates and an assessment of the overall fit of the model.

It was also hypothesized that ability plays a moderating role in these relationships (H_{4A}, H_{4B}, and H_{4C}). To examine the moderating effects of perceived ability on the structural paths, the sample was split into two based on the high or low ability experimental condition. Using the same measurement model used for the overall structure model, significant differences in structural parameters between individuals with high or low perceived ability were examined using two-group LISREL. The path diagrams presented in Figures 5 and 6 depict the baseline models and their parameters for the low and high ability groups.

Figure 5. Structural Equation Model Parameters for the High Ability Condition

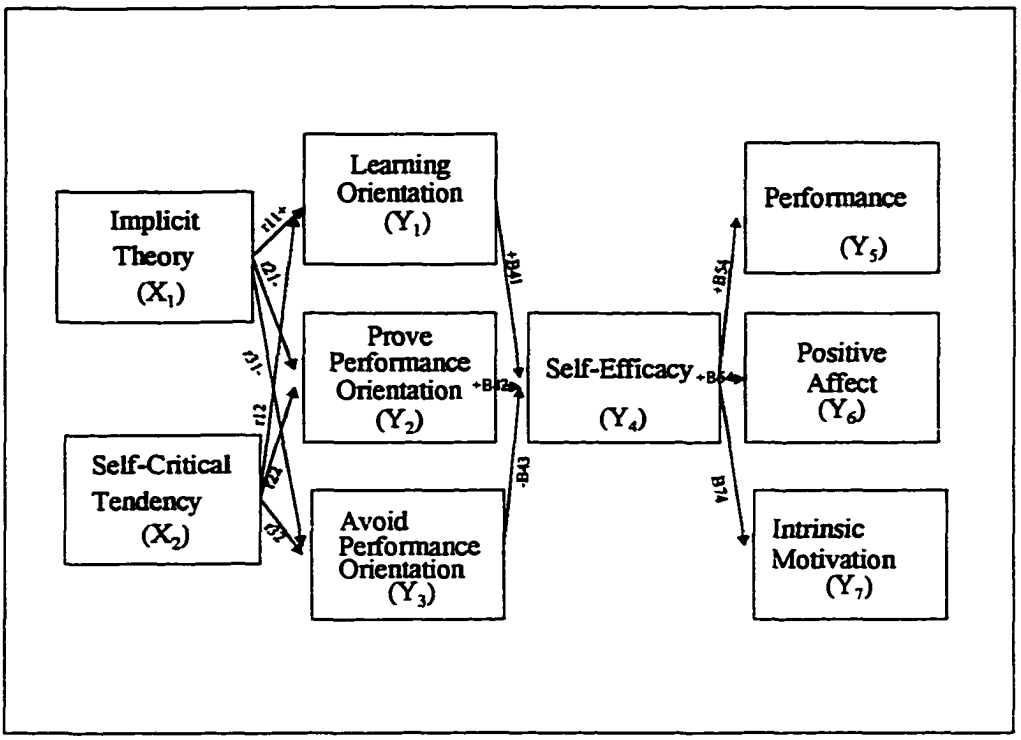
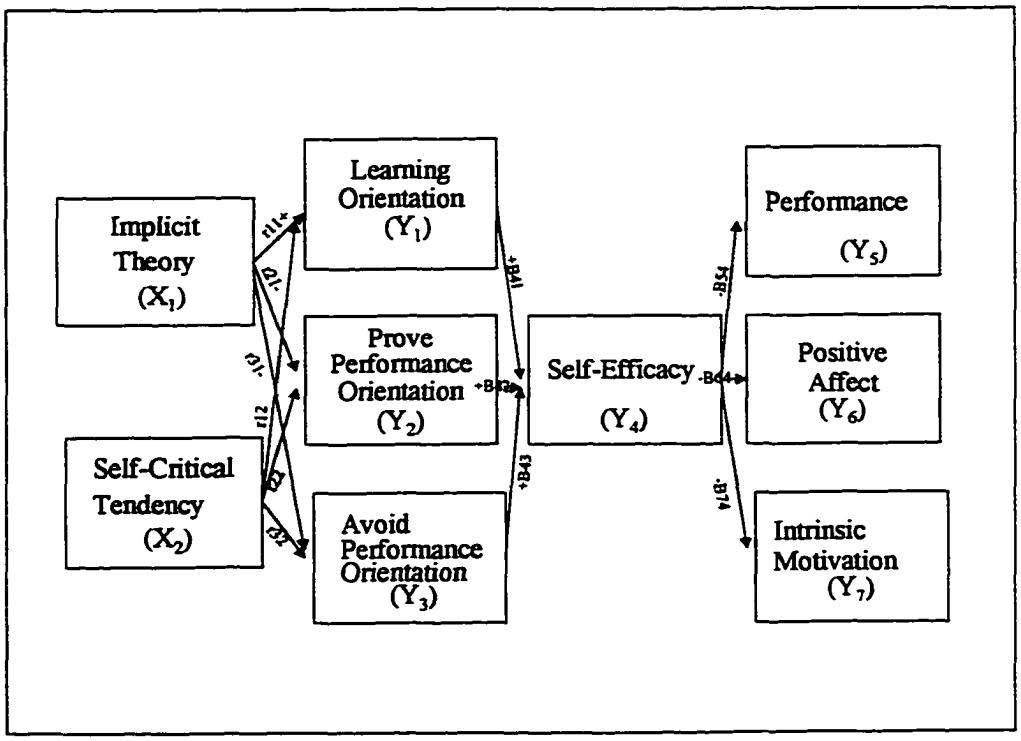


Figure 6. Structural Equation Model Parameters for the Low Ability Condition



The paths, which tested the hypotheses, are as follows:

- Learning orientation is determined by implicit theory (path γ_{11}) and self-critical tendency (path γ_{12}). Specifically, individuals with a higher learning orientation have a more incremental theory and are less self-critical.
- Performance-prove orientation is determined by implicit theory (path γ_{21}) and self-critical tendency (path γ_{22}). Specifically, individuals with a higher performance-prove orientation have a more entity theory and are more self-critical.
- Performance-avoid orientation is determined by implicit theory (path γ_{31}) and self-critical tendency (path γ_{32}). Specifically, individuals with a higher performance-avoid orientation have a more entity theory and are more self-critical.
- Self-efficacy mediates the relationship between learning orientation and affect (paths B_{41} and B_{54}) intrinsic motivation (paths B_{41} and B_{64}), and performance (paths B_{41} and B_{74}). The relationship between goal orientation and self-efficacy is moderated by perceived ability. Specifically, in high ability conditions, there should be no differences in the three outcomes for the groups. However, in a low ability condition, individuals with a higher learning orientation and higher performance-prove orientation will have higher self-efficacy (path B_{41}) and more positive affect (path B_{54}), greater task enjoyment (path B_{64}), and better task performance (path B_{74}) than those with a higher performance-avoid orientation.

Several criteria were examined to determine whether the models fit the data well. The chi-square goodness-of-fit test assesses the adequacy of the theorized model in terms of its ability to recreate the observed covariance matrix. Models that result in a predicted covariance matrix that significantly deviates from the observed covariance matrix are judged to be inadequate. Thus, statistically significant values of χ^2 will result in model rejection. This statistic is sensitive to sample size, with large samples more likely to yield significant values of χ^2 and result in model rejection and with small sample sizes more likely to yield nonsignificant values of χ^2 and result in acceptance of the model even with gross mis-fits.

Two indices, the normed fit index (NFI) and the relative noncentrality index (CFI), are less sensitive to sample size. With possible values that range from zero to one, values of .9 and above are considered very good fits. They represent the percentage of variance in the covariance matrix that is accounted for by the theorized model.

Another index of fit, the parsimonious fit index (PFI), is a modification of the NFI. It takes into account the number of degrees of freedom given up in order to arrive at any particular level of goodness of fit. However, this is a difficult index to interpret because there is no specific value for the PFI that represents good fit. The index is based on the idea that, other things being equal, a good fit attained by a parsimonious model represents the scientific ideal. Thus, the model with the highest overall level of fit (NFI) does not necessarily represent the best fit to the data if another model has fewer unknowns.

LISREL also provides several goodness-of-fit indices that are based on the discrepancies between the observed covariance matrix and the implied matrix, instead of the χ^2. The root mean square residual (RMSR) is the average of the absolute

discrepancies between the observed and implied matrices. As a general rule of thumb, values of .05 or less represent good fit. The goodness of fit index (GFI) is based on a ratio of squared discrepancies to observed variances. Values of .9 or above indicate a good fit. The adjusted goodness of fit index (AGFI) adjusts GFI by a ratio of the degrees of freedom of the restricted null matrix. As with GFI, values of .9 and above indicate a good fit.

Based on the criteria described above, the baseline models do not appear to fit the data well (See Table 13 for a summary). For the high ability group, the $\chi 2$ is large (37.03) and significant ($p < .05$). The fit indices show that the model does not account for the data. Specifically, the NFI (.49), CFI (.62), GFI (.89), and AGFI (.78) fall below the fit criteria of .9. Additionally, the RMSR is .10, which is above the .05 criteria. The same is true for the low ability group. $\chi 2$ is large (42.67) and significant ($p < .05$). The fit indices fall below the criteria of .9: NFI = .63, CFI = .76, GFI = .86, and AGFI = .73. The RMSR is .14, which is above the .05 criteria.

Based on these results, additional paths were freed. The Modification Indices were reviewed to determine whether additional paths might improve the fit of the model. This analysis roughly indicates how much the x^2 for the model will be improved by freeing each fixed path present in the model. However, paths should not be freed blindly. Although this may reduce x^2, it may produce a nonsensical model. Thus, theory and past research was taken into account. Direct paths were freed between the learning, prove-performance orientation and avoid-performance orientation and the outcomes. While this improved the fit, the model still did not account for the data in either the high or low ability groups.

A second revised model was tested. Because the correlations and regressions described earlier seemed to be so weak, implicit theory and self-critical tendency were removed from the model. This revision resulted in a model that fit the data well. For the high ability group, the $\chi 2$ is small (.96) and nonsignificant. The fit indices show that the model does account for the data. Specifically, the NFI (.98), CFI (1.00), GFI (.99), and AGFI (.96) all fall well above the fit criteria of .9. Additionally, the RMSR is .02, which is below the .05 criteria. The model also fits the low ability group data well. The $\chi 2$ is small (4.83) and nonsignificant. The NFI (.95), CFI (.98), and GFI (.98) fall well above the criteria of .9. However, the AGFI is a little low (.77). The RMSR is .04, which is below the .05 criteria. The revised structural equation models are presented in figures 7 and 8.

Table 13
Fit Indexes for the Sequence of Structural Models

Model	χ^2	df	NFI	CFI	PFI	RMSR	GFI	AGFI
Overall Structure								
1. Baseline model	403.60*	23	.14	.12	.49	.18	.76	.52
2. Revised model	41.83*	14	.91	.94	.29	.09	.93	.78
3. Revised model with implicit theory and self-critical tendency removed	7.60	3	.98	.99	.14	.01	.98	.84
High Ability								
1. Baseline model	37.03*	23	.49	.62	.45	.10	.89	.78
2. Revised model	25.33*	14	.65	.69	.25	.09	.92	.74
3. Revised model with implicit theory and self-critical tendency removed	.96	3	.98	1.0	.14	.02	.99	.96
Low Ability								
1. Baseline model	42.67*	23	.63	.76	.41	.14	.86	.73
2. Revised model	28.61*	14	.76	.82	.29	.12	.91	.70
3. Revised model with implicit theory and self-critical tendency removed	4.83	3	.95	.98	.14	.04	.98	.77

*$p < .05$.

Figure 7. Revised Structural Equation Model Parameters for the High Ability Condition

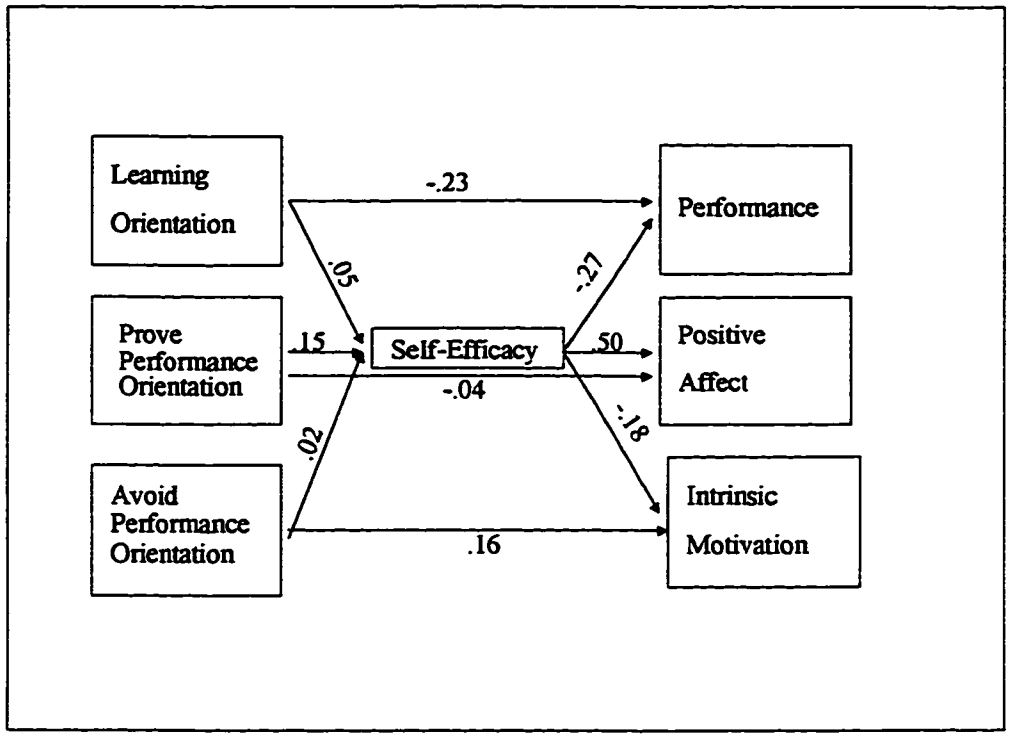
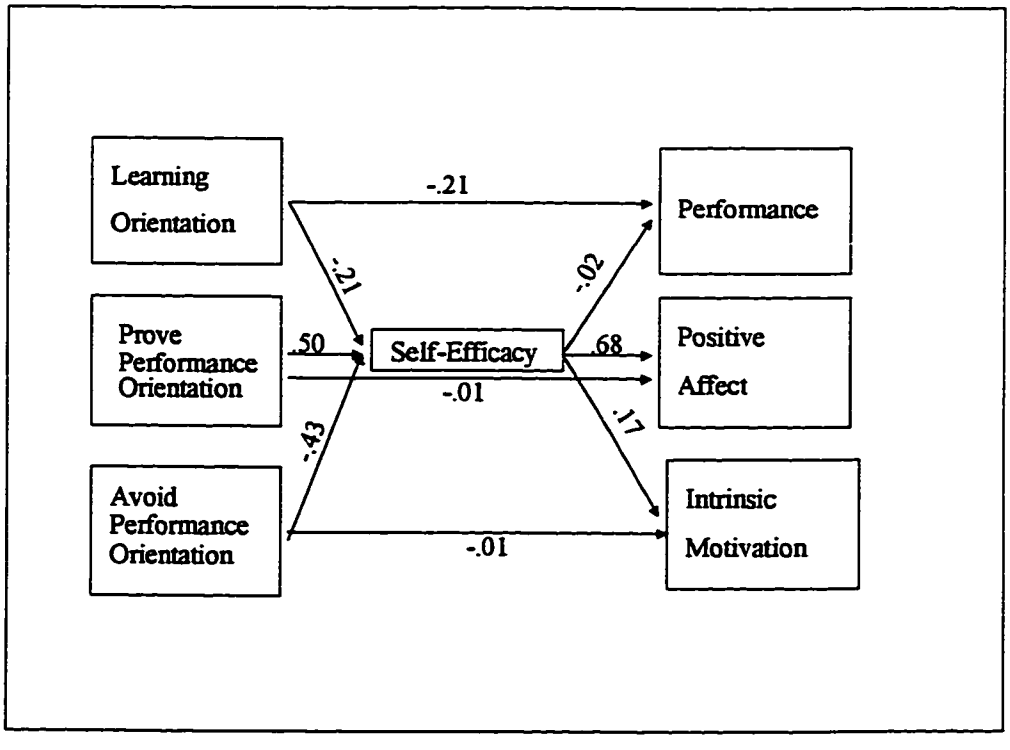


Figure 8. Revised Structural Equation Model Parameters for the Low Ability Condition



Although the trimmed model seems to fit the high ability data slightly better than that of the low ability data, it does not seem to be significantly different. Thus one cannot conclude that ability had a moderating effect on the proposed relationships.

The self-efficacy hypothesis appears to be partially supported. Based on the revised model, it does seem to have a mediating role in the relationship between goal orientation and the outcomes of affect, intrinsic motivation, and performance. However, there was also a direct path between goal orientation and outcomes.

Chapter 10

Discussion

The present study was conducted to examine the impact of individuals' achievement goal orientation on affect, intrinsic motivation, and performance. It was proposed that individuals subscribe to different implicit theories of decision-making ability in which this ability is perceived as a malleable quality or a fixed trait. These theories determine the goals adopted in achievement situations, which in turn set up different motivational patterns and produce different psychological and behavioral outcomes. This relationship is complex in that there are several mediating and moderating variables that impact the relationships. In light of this, self-critical tendency was included as an additional antecedent of goal orientation. This construct was believed to be especially useful in explaining why some individuals have a greater desire than others to avoid negative judgment. It was also hypothesized that self-efficacy mediates the relationship between goal orientation and the outcomes of affect, intrinsic motivation, and performance. Lastly, perceived ability was believed to moderate the relationship between goal orientation and self-efficacy.

In the sections that follow, the results of the present study will be compared and contrasted with relevant research. The various findings, particularly those that do not support hypotheses, are partly explained by study design, instrumentation and theoretical issues. These will be discussed. Study limitations, with respect to internal and external validity, are presented in this discussion, and are also summarized separately. Future research directions in the areas of implicit theories and goal orientation are proposed. And

finally, the implications of these constructs for organizational research and managerial practices are discussed.

Interpreting Present Findings

Overview. Overall, the results of this study do not provide support for the Implicit Theories Model. The most potent finding is that ability had a significant main effect, not the moderator effect proposed. That is, individuals in the low ability condition reported lower self-efficacy, less positive affect, and less task enjoyment than did participants in the high ability condition. They also exhibited lower performance in the management simulation, operationalized as the average number of shifts in which there were scheduling problems. However, no significant differences were found within groups, based on the individual difference variables hypothesized to have predictive power. Specifically, individuals with a learning or performance goal orientation reacted similarly within both experimental conditions. Additionally, the data suggest that the hypothesized antecedents of goal orientation, implicit theory and self-critical tendency, were not good predictors of goal orientation. In fact, in the path analysis conducted, the model was improved considerably and the data fit the model better when these two variables were excluded. Lastly, the path analysis also provided partial support for the mediating role of self-efficacy.

Antecedents of goal orientation. The results of the study did not support the hypothesis that implicit theory of decision making and self-critical tendency predict goal orientation. Regression analysis yielded nonsignificant results. Although the individual relationships were in the expected directions, they were weak. Specifically, as expected,

the relationship between implicit theory and dominant goal orientation was positive and significant ($r = .19, p < .05$). Thus, individuals with a more incremental view of decision-making ability were more likely to be learning-oriented. Implicit theory had weak relationships with the three goal orientation scales, especially the learn scale. The correlation was negative with both the avoid subscale ($r = -.17$) and prove subscale ($r = -.19$), but only significant with the latter ($p < .05$). Further, the correlation was positive, but nonsignificant, with the learn subscale ($r = .05$). These results are somewhat surprising when compared to the results consistently obtained by Dweck and her colleagues (e.g., Dweck, et al., 1995). However, other researchers have had similar results (Hayamizu & Weiner, 1990; VandeWalle, 1997). A reason for this may be differences in operationalization. Researchers define and operationalize performance and learning goals differently.

Thus, this lack of significance may be attributed to a number of methodological issues and not attributable to the theory itself. While the theory may be strong, the method with which implicit theory has been measured is deficient. The present research raises several concerns about the measure's construct validity. Dweck and her colleagues have used the measure to classify individuals as entity (i.e., those with scores of 3 and below) or incremental theorists (i.e., those with scores of 4 and above). They have consistently reported that this method, although excluding 10-15% of individuals who do not have a clear or consistent implicit theory, evenly distributes the remaining sample into each category. In the present study, as in others (Schwaeger, 1997; VandeWalle, personal communication, November 30,1998), most participants (65-80%) are classified as incremental theorists according to this criterion. Generally, then, as was done here, the

classification criteria are abandoned and the variable is scored as a continuous variable. While this approach enables the retention of the measure in the study, it may compromise the measure's validity and diminish its predictive power.

One possible reason so many participants endorsed a more incremental theory may be that an incremental theory is more compelling and socially desirable. Dweck found that when the implicit theory measure was originally comprised of incrementally worded items, participants universally endorsed the items. Dweck contends that because the measure now depicts only an entity theory, the issue is resolved. However, it does not seem to be.

Very recent work on the measure looks promising. For example, Levey et al. (1998) endorsed using a domain-general measure (e.g., everyone is a certain kind of person, and there is not much they can do to really change that) instead of a domain-specific measure. Perhaps a more general item would not be as socially desirable as a specific item and would illicit more response variability. Levy et al. also described a new 8-item scale that includes entity and very strongly worded incremental items to address issues of acquiescence sets. They reported correlations between the two subscales that range from -.69 to -.86.

Perhaps an even better method of tapping into participants' implicit theories is to measure them indirectly. After all, implicit theories are supposed to be unconscious representations, yet we have consistently used conscious measures. Instead of directly asking participants whether they endorse an entity or incremental theory, one possibility is to present participants with hypothetical events and ask them to imagine they were in the situations described. These scenarios could represent failure (e.g., "You are unable to solve a personnel problem at work"). Additionally, respondents could be informed of the

cause of the event (e.g., "Although you have very strong technical skills, you are not very good at human relations issues") and then asked whether the event could be avoided in the future and why or why not. An incremental or entity view can then be inferred from the response given.

In addition to problems with the measure, there may have been additional bias in the present study. First, participants may have been responding to demand characteristics. In recruiting participants, and in the consent form, participants were informed that the study was a 'psychological study' about decision-making and management and that participation would be a valuable learning experience that could lead to self-awareness and the acquisition of new knowledge and skills. Implied in these statements is the notion that decision-making itself is something that can be learned. Thus, when asked if they thought decision-making was something basic about a person that can't be changed or something that could be developed, participants may have been repeating what they had heard from the researcher.

Second, most people may not perceive decision-making ability to be a human attribute that is similar to intelligence or morality. Decision-making ability may instead be perceived as a skill, and as such, something that can be improved and learned. Intelligence and morality may be perceived as personal attributes.

The antecedent self-critical tendency also had unexpected relationships. Although weak and nonsignificant, it was positively related to implicit theory, dominant goal orientation, the learn scale, and the prove scale. This finding suggests that individuals with a more dominant learning orientation also tend to be more self-critical in processing self-relevant information. Also, self-critical tendency was negatively related to the prove

scale ($r = -.21, p < .05$). Additionally, it was positively related to self-efficacy ($r = .33, p < .01$) and positive affect ($r = 27, p < .01$). This finding is surprising and difficult to explain. Ishiyama and Munson (1993) reported that self-critical tendency was negatively related to social desirability and positively related to fear of negative evaluation, public self-consciousness, and private self-consciousness. However, the scale developers did not use the variable experimentally to test hypotheses. It may simply be the case that self-critical tendency appears to be a valid construct from the results of a nomological network analysis, but that, in and of itself, it does not have strong predictive power.

Goal orientation and outcomes. It was hypothesized that individuals' goal orientation would have a differential impact on the outcomes of affect, intrinsic motivation, and performance for individuals in the low ability condition. The data show that a more dominant learning orientation did not predict more positive affect, greater task enjoyment, or better performance. This is surprising, given that other researchers have found relationships between this variable and work-related behaviors (e.g., Sujan, et al., 1994; VandeWalle & Cummings, 1997). For example, VandeWalle and Cummings (1997) found strong support for the influence of goal orientation on the feedback-seeking process. In one study, the prove and avoid dimensions of the performance orientation were negatively related to feedback seeking. Also, using the dominant goal orientation difference score, the researchers found that the likelihood of feedback-seeking increased as the learning goal orientation became greater than the performance goal orientation.

It is clear why there would be a link between goal orientation and feedback-seeking. Feedback-seeking is a proactive behavior in which individuals actively seek information to improve their performance, reduce their uncertainty, and learn the ropes (VandeWalle &

Cummings, 1997). Thus, those with a learning approach would perceive performance feedback as instrumental in achieving their goal of personal development. Instead, those with a performance orientation would perceive performance feedback as a potential threat to their ego in that if the feedback is negative, it validates their fixed ability level.

In light of this research, one possible explanation for the present finding is that an active process that may be instrumental to learning, such as feedback-seeking, was not measured. Instead, the measured outcomes were all reactions. Perhaps goal orientation is a better predictor of individual differences in active learning behavior.

Another possible explanation for the present finding is that the interaction between situational and dispositional aspects of goal orientation was not considered in the study, thus confounding the results. Dweck's theory suggests that individuals have a dispositional goal orientation that determines behavior when there are no situational cues. However, environmental cues can override dispositional tendencies and determine subsequent behavior. Thus, goal orientation may be treated as either a dispositional trait or a situational characteristic. In fact, studies have either measured goal orientation as a trait or found that goal adoption may be manipulated through the use of competitive reward structures, the prevalence of normative reward structures, the prevalence of normative information, and the use of evaluative feedback (Button, Mathieu, & Zajac, 1996).

In the present study, goal orientation was measured as an individual trait and it was assumed that there were no environmental cues. However, it is possible that participants were responding to the demand characteristics described above. Again, in recruiting participants, the study was described as a potentially valuable learning experience from

which participants could gain self-awareness. This may have been a situational learning cue that overrode a dispositional performance orientation. Thus, a trait orientation was measured when, in fact, a state orientation was operating in the study and producing the observed outcomes.

The role of self-efficacy. The self-regulatory process of self-efficacy was hypothesized as a mediator of the effect of learning and performance goal orientations on the outcomes of affect, intrinsic motivation, and performance. This hypothesis was partially supported by the data. While it was a significant path contributing to the overall model, there was also a direct path from goal orientation to these outcomes.

As would be expected, self-efficacy was negatively and significantly related to the prove dimension of performance orientation ($r = -.20, p < .05$).). Further, it had a strong positive relationship with positive affect ($r = .61, p < .001$). However, it also had some surprising relationships. It was positively and significant related to self-critical tendency ($r = .33, p < .01$) and the two self-critical subscales, negative self-processing ($r = .28, p < .01$) and failure in positive self-processing ($r = .31, p < .01$).

A possible explanation for these findings lies in how self-efficacy was operationalized. Self-efficacy refers to a belief in one's capability to perform a specific task, which can be altered through observational learning and past performance. The scale items appear to have face validity and the measurement was taken following 'ability feedback'. However, this ability feedback did not directly pertain to simulation performance. Participants did not have any past experience from which to base their judgments. Therefore, in this study, self-efficacy may have been more a measure of

people's expectations for success on the simulation (Vancouver, J., personal communication, November 16, 1998).

Other studies that have examined the mediating role of self-efficacy have used a repeated measures design, taking self-efficacy measures at different points in the simulation following a number of trials (e.g., Cervone, et al., 1991; Wood & Bandura, 1989; Wood, et al., 1990). Thus, participants were able to base their beliefs on past simulation performance. In the present study, performance was only measured once, after the first 'real trial'. These other studies used several trials (i.e., up to 12), and performance was computed as the average of the scores across several trials. Self-efficacy beliefs may have been different in the present study if the measure was taken at different points.

The role of perceived ability. The results do not support the hypothesis that perceived ability has a moderating role in the relationship between goal orientation and the outcomes of self-efficacy, affect, intrinsic motivation, and performance. The ability manipulation did have the expected effect on outcomes. Participants in the high ability condition reported more positive affect and greater task enjoyment and exhibited higher performance than participants in the low ability condition. In addition, they reported higher self-efficacy, or expectations for simulation success, than participants in the low ability condition. However, within the low ability condition, there were no differences between the prove and avoid dimensions of performance goal orientation.

A reason for this finding may also be a measurement issue. Again, most participants tended to be learning oriented. As described above, a learning orientation is more

compelling and socially desirable. So, the measure of learning orientation may not have been a true measure, thus limiting its predictive power.

Another issue is the way in which perceived ability was manipulated. Although the manipulation was labeled as perceived ability, it may have actually been feedback that was manipulated. A feedback intervention was defined as an "action taken by an external agent to provide information regarding some aspect of one's task performance" (Kluger & DeNisi, 1996' p. 255). According to this definition, the perceived ability manipulation was a performance feedback intervention.

Thus, the feedback literature may provide a partial explanation for the finding. According to Kluger and DeNisi (1996), when individuals receive a negative or positive performance evaluation, they may have a multitude of reactions. There is a substantial amount of evidence that negative feedback results in a classic learned helplessness response (Kluger & DeNisi, 1996). This would explain the observed outcomes of lower affect, task enjoyment, and performance in the low ability group regardless of goal orientation. The impact of goal orientation is overriden by the impact of the feedback itself.

In this study, the manipulation was introduced by giving participants four pieces of information: how they performed on the Management Skills Inventory, a measure of decision-making ability (well or not well); how they performed compared to others who had completed the inventory (better or worst); how they were expected to perform in the simulation (well or not well); and what their decision-making ability was (high or low). Participants may not have focused on ability, focusing instead on one of the other pieces of information. Indeed, when participants were asked in the manipulation check to state

the feedback they had been given on their decision-making ability, there was variability in the information that was recalled in both the high and low ability conditions. Participants generally recounted one of these pieces of information, but not necessarily ability.

Although participants were asked in the manipulation check what the feedback was, they were not directly asked about their ability perceptions. Some people may not have perceived that their performance or score was due to their ability, but to some other cause. It may have been informative to have asked participants in the manipulation check how they perceived their ability (i.e., high or low). Additionally, their attributions for Management Skills Inventory performance could have been probed. Based on the information recalled above, a considerable amount of variability probably would have been found. Some may have focused on their perceived ability, but others may have focused on their management experience or on the measure itself. In fact, when some individuals were given the feedback, they self-verbalized some of these attributions. For example, some participants stated that they had not done well because they did not have any management experience.

Limitations

Certainly all studies, regardless of whether the data support or fail to support the proposed hypotheses, have limitations. Some of the limitations of the present study have been set forth in explaining the findings. They are summarized below and categorized as either methodological or conceptual.

Methodological issues. All of the exogenous and all, but one (i.e., performance), of the endogenous variables were measured with self-report pencil-and-paper instruments.

With this reactive measurement method, it is always questionable whether research participants are both responding in a socially desirable way and reacting to the demand characteristics of the experiment. Steps were taken to minimize the potential for bias. Participants were assured of the anonymity and confidentiality of their responses. They were also informed of the value of candor in completing the questionnaires and that there were no right or wrong answers. Additionally, to assuage suspicions about the links of the individual difference variables of implicit theory, goal orientation, and self-critical tendency with the other variables in the study, data was collected at two different points. Individual difference data was collected one to two weeks prior to simulation performance.

In analyzing the data and interpreting the results, one must be aware of the variety of measurement effects that may have been produced in using the self-report method, including the guinea pig effect, role selection, response acquiescence, and social desirability. For example, individuals tended to report high intrinsic motivation or task enjoyment. People may have been inflating their responses because they had just spent approximately two hours of their time working on the simulation and they needed to believe that it was an interesting and valuable experience. This may have been a classic example of cognitive dissonance (Festinger, 1957). They may have also wanted the researcher to believe that they enjoyed the study. Even though intrinsic motivation was measured with a pencil-and-paper instrument, participants knew they would be meeting with the researcher to verbally answer questions and that they would be handing her the questionnaire.

Perhaps a better measure of intrinsic motivation would have been behavioral. Elliott and Harackiewicz (1994), for example, used a behavioral measure of intrinsic motivation, the number of minutes participants engaged in the experimental task during a five-minute free-choice period. This would be a more accurate and valid measure.

Second, it should be noted that common method variance does not appear to be a problem in this study for the correlations among the measures were mostly low and nonsignificant. However, this lack of statistically significant relationships among measures is problematic in that it is evidence that the construct validity of the measures is questionable. It has been alluded to throughout this discussion that there are problems with the measures and how the constructs were operationalized. For example, with the implicit theory and goal orientation measures, participants may have been responding to demand characteristics. Also, the self-efficacy measure really appears to be tapping into expectations for success, not necessarily self-efficacy. Thus, the lack of statistically significant causal relationships may be largely explained by the lack of construct validity of several variables, including implicit theory, goal orientation, self-efficacy, perceived ability, and intrinsic motivation.

Third, even though the computerized simulation is realistic, the characteristics that allow for experimental control and contribute to its internal validity, detract from its external validity (e.g., influence of others, external influences). Individuals may react and perform quite differently when they "know it counts" and that it will impact their future. While the simulation task itself may have been realistic, the external situation was not. This illustrates the classic question of generalizing lab results to field settings. However, as noted by VandeWalle and Cummings (1997, p.398), "...if significant results could be

obtained in an experimental context where the stakes for the participants were relatively low, then there is reason to speculate that similar, if not even more dramatic, results could be expected in a real world organizational setting."

Fourth, another limitation of this research is the issue of time. This study looked at the impact of perceived ability and self-efficacy on the outcomes of affect, intrinsic motivation, and performance in a static situation instead of looking at these relationships as they unfold over time. It may be that these processes play different roles over time. For example, Feltz (1982) looked at the changing relationships between self-efficacy, outcome expectations, and performance over a series of diving trials. He found that while self-efficacy initially played an important role in behavior, past behavior had the greatest impact on future behavior and achievement. Sexton and Tuckman (1991) also obtained similar findings in a study of college students' mathematical performance and the role of self-efficacy and outcome expectations. Thus, different self-regulatory processes may be important at different stages of behavior. It may also be that learning orientation may have more of an effect on behavior over time as individuals receive performance feedback. Therefore, the use of multiple simulation trials may have yielded more meaningful results. Indeed, other studies that have utilized organizational simulations found that self-efficacy and self-set goals impacted earlier trials and that prior performance impacted subsequent performance in later trials (Bandura & Jourden, 1991; Cervone, et. al., 1991; Wood & Bandura, 1989; Wood, et al., 1990).

Fifth, only one dimension of performance, the average number of shifts for which there were problems, was measured in the present study. Bandura (1977a) described task performance as being comprised of three dimensions: choice of whether or not to perform

the task and/or difficulty level of the task to undertake; effort expended to accomplish the task; and achievement level obtained in the task. While it may not have been feasible to have measured task choice in the present study, effort could have been measured. There is anecdotal evidence that research participants in the present study differed in effort expended. For example, some participants worked on several simulation trials even though they had been instructed to do one. Others stated that they felt really challenged and would have enjoyed working on more. However, others stated that they got bored and implemented a schedule even though they knew it had a lot of problems so that they could just end the trial. Thus, effort could have been operationalized as the total amount of time participants worked on the simulation or the total number of trials they chose to work on, given unlimited testing time and/or number of trials. Additionally, effort could have been conceptualized as a mediator of the effect of self-efficacy on task achievement level (Berry & West, 1993).

Sixth, there are sample issues. Most of the participants were students. This is a sample of convenience and there is, of course, always a problem with utilizing student samples and then generalizing from students to working adults. However, most of the students were working part-time. Also, characteristics of participants from both sample sources may have caused a restriction of range with respect to implicit theory and goal orientation. The student sample, because they are working on a degree, obviously value learning. The nonstudent sample was comprised of mostly professionals with college degrees who also valued learning. Thus, both samples may have been biased toward an incremental theory and a learning orientation.

Conceptual issues. Dweck and her colleagues have provided considerable empirical support for the model in studies using samples comprised of children and adolescents. The theory may be too simplistic for older adults for whom past "real life experience" may be a better predictor of response patterns. Some participants alluded to this in the debriefing by saying that they were probably more entity than incremental when they were in high school but that "life" had made them more tough and shown them that "things aren't so black and white, so to speak."

Also, there were obviously many other variables not included in the study that may contribute to the explained variance and that may be more powerful mediators of the relationship between dominant goal orientation and outcomes than self-efficacy. Possible cognitive mediators include self-efficacy, standards, self-monitoring, self-evaluative judgment, and discrepancy detection and reduction. Possible affective mediators include pride, fear, guilt, depression, resignation, surprise, threat, and anxiety. Possible behavioral mediators include goal setting, concentration, task involvement, and strategy use. Clearly, all of these variables cannot be incorporated into one study. The sample size required to have adequate power would be too large to make such a study feasible. In addition, the path analysis would be too complex and difficult to interpret.

Implications for Organizational Research and Managerial Practice

While the findings of the present study do not provide support for the Implicit Theories Model and its tenets, the results do have implications for organizational research and managerial practice. In particular, the study illustrates how powerful negative feedback is to individuals. The negative feedback given to study participants pertained to

an abstract construct in a contrived experimental setting. Even though many participants made self-verbalizations that they did not think the feedback impacted them or they consciously ignored it, the feedback still had an impact on their affect, the extent to which they enjoyed the simulation, and their performance.

In many organizations, there is a push toward frequent feedback from multiple sources (e.g., 360-degree feedback, upward feedback). There is often the implicit assumption that this feedback whether positive or negative, provides individuals with important learning information that ultimately has positive outcomes. However, there may be unintended negative effects. The impact of negative feedback may be magnified when feedback is given in a real world setting in which individuals are aware of how much it impacts their development, their merit increases, their eligibility for assignments and promotion, and so forth. Regardless of how learning oriented an individual is, this feedback can override any predispositions and start a whole negative affective, cognitive and behavioral self-regulatory process that has a deleterious impact on outcomes.

A related issue is the nature of learning in organizations. Many organizations describe themselves as learning organizations. That is, the organizational environment is such that all of its members are encouraged to expand their personal capacity and to develop themselves toward the goals and purposes that they personally choose (Senge, Kleiner, Roberts, Ross, & Smith, 1994). This type of environment is a good match for individuals with a learning goal orientation. The strong environmental cues may also override the individuals' predisposition toward a performance orientation. Research in the area also provides information on what internal processes (e.g., self-efficacy) such an environment impacts and how these processes impact individual outcomes.

Lastly, there are also implications for organizational leadership because implicit theories and goals influences social cognitions and behavior in addition to self-cognitions and behavior. Thus, implicit theories and goal orientation of managers influences their leadership style and how they interact with their subordinates. Certainly, a manager who holds an incremental theory and a learning orientation will believe in developing his/her subordinates. Thus, he/she may be lenient with performance reviews, encourage mistakes, and foster self-management among subordinates. On the other hand, a manager who holds an entity theory and a performance orientation may be very critical of subordinates when they make mistakes and may believe they cannot be developed. This may have a deleterious impact on subordinate morale and performance.

Future Research Directions

Based on the issues raised by the results of the present study and its limitations, there are certainly several worthy research directions. First, conceptual work needs to be done. Other dispositional and situational variables should be included in the Implicit Theories Model. As the present study illustrates, there may be additional antecedents of goal orientation. One antecedent identified by Duda and Nicholls (1992) is attribution for success. In their study they found that a learning goal orientation is associated with a belief that effort is the cause of success. On the other hand, a performance goal orientation was associated with a belief that high ability is the cause of success.

Second, there is also a need for better measures to be developed that identify and discriminate between incremental and entity theorists, and between learning and performance orientations. With respect to pencil-and-paper tests, perhaps we need more

creative ways of tapping into these constructs instead of directly asking participants their views. For example, to tap into an implicit entity theory, one could present participants with a scenario in which an individual fails and ask participants why the person failed, if it could be avoided in the future, and how. It may also be worthwhile to ask about attributions for failure.

Third, there is also potential for research beyond the self. That is, implicit theories and goals should impact social cognitions and behavior. Levy, et al. (1998) describe a series of interesting studies in which individuals' implicit theories about the malleability versus fixedness of human attributes predicted differences in degree of social stereotyping.

Conclusions

While the findings of the present study do not provide support for the Implicit Theories Model and its tenets, it is believed that this model has important implications for organizational research and managerial practice. The Implicit Theories Model can be used to identify and assess the effect of different motivational patterns on important individual and organizational outcomes and to understand the influence of the work environment on individual behavior. This information has implications and value for organizations in terms of employee development, training, management/leadership, work design/redesign, and performance feedback/management systems. It can provide insight, for example, on creating environments that maximize learning and growth instead of performance when training and developing employees. While such environments enable individuals to learn and develop, they ultimately influence performance positively at the individual, group, and organizational levels.

Appendix A

Internal Review Board Study Approval

To: Anna Tedesco

From: Professor David O'Brien, Chair,
Baruch College Human Subjects Committee

Re: Approval of the project entitled "Implicit Theories and Self-Regulatory Processes..."

Date: June, 1998

The protocol for the referenced project has been approved by the Baruch College Human Subjects Committee on May 13, 1998.

This approval is in force for one year. If you wish to continue the project beyond one year, a protocol must be submitted two months in advance.

Please note that the consent forms approved with the protocol are the only ones that can be used. No changes can be made without the approval of the Committee.

Thank you and good luck with the research.

Appendix B

Consent Form

Baruch College - Department of Psychology

The following research study is part of a doctoral dissertation being conducted at the Baruch College Psychology Department of The City University of New York by Anna M. Tedesco under the supervision of Professor Donna E. Thompson.

Purpose of the study: You are being asked to participate in a research study that has two purposes: 1) to find out what people think of some recently developed questionnaires; and 2) to see how people react to a new business decision-making simulation.

Study procedure: The study consists of two parts. First, in Part I, you are asked to complete a short questionnaire, which should take approximately 10 minutes. In Part 2, you will work at a computer as a department manager in a business decision-making simulation. You will also be asked to answer questions about your reactions to the simulation. This should take approximately 2 hours.

Risks and benefits: Participation in this study is voluntary. There are no physical risks associated with participation in this study. If you feel uncomfortable with any question, you may choose to skip the question. You can also withdraw from the study at any time, with no penalty. Although there are no direct benefits to be derived from the study, I hope it will be informative and educational.

Confidentiality: The information you provide is confidential and will be held anonymous. You will not be asked to put your name on any of the information you provide. Also, your responses will not be released to anyone or identified by name in writing or orally at any stage of the data analysis or in the final report of the study.

Conclusion of the study: You will be given information concerning the material presented in the study. Referral sources for future reference will also be available. In addition, I would be happy to provide you with a summary of the study results upon request. If you have any questions about this study, please contact Ann Tedesco at (212) 387-1530 or Donna Thompson at (212) 387-1535.

Thank you for your cooperation. I am very appreciative of your assistance and will be happy to answer any questions you may have.

Sincerely,

Ann Tedesco

I have read and understand the information above. I agree to take part in this research study. The researchers have answered all the questions I had to my satisfaction and have given me a copy of this form.

Name (please print): _____ **Date:** _____

Signature: _____

Appendix C

Participant Background Questions

BACKGROUND INFORMATION

Please answer the following questions about yourself. They are included in this packet so that we have information on the characteristics of our study sample. This information cannot identify you in any way. It will be grouped with that of other study participants.

Sex:

_____ Female
_____ Male

Age:

_____ Years

Highest level of education:

_____ Some high school
_____ Graduated high school
_____ Some College
_____ Graduated college
_____ Technical/Vocational School Graduate
_____ Some graduate school
_____ Graduate degree
_____ Other (Please specify)

_____

If presently enrolled in school, status:

_____ Freshman
_____ Sophomore
_____ Junior
_____ Senior
_____ Non-matriculated
_____ Enrolled in graduate program

Ethnicity:

_____ Asian/ Pacific Islander
_____ Black/ African American
_____ Hispanic/ Latino/ Chicano
_____ Native American/ Indian
_____ White/ Caucasian (non-Hispanic)

_____ Other (Please describe)

_____

Are you currently employed?

_____ No
_____ Yes, full-time
_____ Yes, part-time

If you are not currently employed, have you ever been employed?

_____ No
_____ Yes, full-time
_____ Yes, part-time

If you are currently employed, what is your exact job title or function?

_____
_____

Have you ever held a supervisory position?

_____ No
_____ Yes,
How many years of supervisory experience do you have? _____

Do you have experience working with computers?

_____ No
_____ Yes

Do you have experience working with computer games or simulations?

_____ No
_____ Yes

****

THIS IS THE FINAL PAGE OF THE QUESTIONNAIRE.
THANK YOU FOR YOUR PARTICIPATION!!

Appendix D

Implicit Theories Measure

DIRECTIONS

One of the most important aspects of a manager's job is decision-making. On a daily basis managers are faced with decisions about various issues that are difficult to make because they are often characterized by ambiguity, conflicting goals, and insufficient information. These decisions are usually made in the middle of an ongoing activity, under time constraints, and with various consequences. Additionally, managers need to understand how their decisions affect others' motivation and performance and how to make the best use of the employees for whom they are responsible.

It is often assumed that people have the necessary skills needed to make decisions. Below are three questions on your beliefs about decision-making. Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 6. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Strongly Agree	2	3	4	5	6 Strongly Disagree

1.	You have a certain amount of decision-making ability and you really can't do much to change it.	1	2	3	4	5	6
2.	Your decision-making ability is something about you that you can't change very much.	1	2	3	4	5	6
3.	There is not much that can be done to change a person's decision-making ability.	1	2	3	4	5	6

Appendix E

Goal Orientation Scale

DIRECTIONS

Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 6. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Strongly Agree	2	3	4	5	6 Strongly Disagree

1.	I am willing to select a challenging work assignment from which I can learn a lot.	1	2	3	4	5	6
2.	I often look for opportunities to develop new skills and knowledge.	1	2	3	4	5	6
3.	I enjoy challenging and difficult tasks at work where I'll learn new skills.	1	2	3	4	5	6
4.	For me, development of my work ability is important enough to take risks.	1	2	3	4	5	6
5.	I prefer to work in situations that require a high level of ability and talent.	1	2	3	4	5	6
6.	I'm concerned with showing that I can perform better than my co-workers.	1	2	3	4	5	6
7.	I try to figure out what it takes to prove my ability to others at work.	1	2	3	4	5	6
8.	I enjoy it when others at work are aware of how well I am doing.	1	2	3	4	5	6

1 Strongly Agree	2	3	4	5	6 Strongly Disagree

9.	I prefer to work on projects in which I can prove my ability to others.	1	2	3	4	5	6
10.	I would avoid taking on a new task if there were a chance that I would appear rather incompetent to others.	1	2	3	4	5	6
11.	Avoiding a show of low ability is more important to me than learning a new skill.	1	2	3	4	5	6
12.	I'm concerned about taking on a task at work if my performance would reveal that I had low ability.	1	2	3	4	5	6
13.	I prefer to avoid situations at work where I might perform poorly.	1	2	3	4	5	6

Appendix F

Self-Critical Tendency

DIRECTIONS

Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 6. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Strongly Agree	2	3	4	5	6 Strongly Disagree

1.	I'm good at looking at myself critically while still remaining positive toward myself.	1	2	3	4	5	6
2.	I tend to blow my weaknesses, limitations, and mistakes out of proportion in my thinking.	1	2	3	4	5	6
3.	When I see someone else doing something well, I become critical of my own activities and accomplishments.	1	2	3	4	5	6
4.	I tend to spoil my good feelings about myself by thinking of, or looking for, something negative within me.	1	2	3	4	5	6
5.	I often turn negative feedback from others into constructive courses of action without getting too hard on myself.	1	2	3	4	5	6
6.	Somehow I have a tendency to come to a critical conclusion about myself too easily.	1	2	3	4	5	6
7.	When things go wrong, I tend to criticize myself quite readily before assessing the situation objectively.	1	2	3	4	5	6

1 Strongly Agree	2	3	4	5	6 Strongly Disagree

8.	I sometimes find myself thinking of negative things about myself for no reason.	1	2	3	4	5	6
9.	Once I detect a weakness in me, or notice a mistake I have made, it is hard to stop thinking negative things about myself.	1	2	3	4	5	6
10.	When I experience a failure or a criticism, I can generally keep from being carried away with critical thoughts about myself.	1	2	3	4	5	6
11.	I tend to appreciate my weaknesses and inabilities without becoming overly critical of myself.	1	2	3	4	5	6
12.	I tend to focus on the positive aspects of myself more readily than on the negative aspects.	1	2	3	4	5	6
13.	I tend to get carried away with my weaknesses and forget to appreciate my strengths when I think seriously about myself.	1	2	3	4	5	6

Appendix G

Managerial Effectiveness Skills Inventory

DIRECTIONS

Read each of the following items below carefully and place an "X" in the blank space corresponding to the response (either True or False) you feel most appropriately answers each question. Please work as quickly as you can and answer every question.

1.	Delegating responsibility is the most important aspect of a manager's job.	T_____ F_____
2.	A manager should always treat production goals and workers' well being as equally important.	T_____ F_____
3.	It is better to miss a deadline than to sacrifice quality.	T_____ F_____
4.	A manager should attend to the overall process and coordination of work, leaving the details to subordinates.	T_____ F_____
5.	It is important for good managers to set specific rather than general goals.	T_____ F_____
6.	It is more important for good managers to be respected than liked by their subordinates.	T_____ F_____
7.	When giving instructions, it generally is more effective to speak in an informal conversational manner than in a formal commanding manner.	T_____ F_____
8.	When providing feedback to employees, it is best to only mention the problems directly relevant to the task.	T_____ F_____
9.	When working under time pressure, it is best to use a different strategy for approaching a task than when there is no time pressure.	T_____ F_____
10.	When approaching a large project, it is best to break up the total task into smaller units before delegating responsibility.	T_____ F_____

11.	Management effectiveness depends more on the manager than on the situation.	T_____ F _____
12.	A good manager accepts defeat in stride, making sure not to show any emotion.	T_____ F _____
13.	A good manager encourages group members to actively take on some management responsibility.	T_____ F _____
14.	A good manager should take responsibility for subordinates' mistakes.	T_____ F _____
15.	Negative feedback is more motivating to employees than positive feedback.	T_____ F _____
16.	Managers should not let subordinates represent the group in dealings with other groups in the company.	T_____ F _____
17.	When approaching a new task, it is best for the manager to let the employees decide how to divide the work.	T_____ F _____
18.	Keeping up morale and keeping up production are of equal importance.	T_____ F _____
19.	Work should be kept at a consistent pace. It should not be sped up or slowed down due to conditions in the market.	T_____ F _____
20.	Long-range planning should take up approximately 25% of a manager's time.	T_____ F _____

Appendix H

Self-Efficacy Scale

DIRECTIONS

Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 5. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Definitely Not True	2	3	4	5 Very True

1.	I think I am capable of high performance in this simulation.	1	2	3	4	5
2.	I think I can do very well in this management position.	1	2	3	4	5
3.	I expect that I will perform well.	1	2	3	4	5
4.	I have confidence in my ability to meet new challenges.	1	2	3	4	5
5.	I am sure that I am capable of overcoming any obstacle.	1	2	3	4	5

Appendix I

Affect

DIRECTIONS

Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 5. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Not at All	2	3	4	5 To a Great Extent

Right now, I feel:

1.	Calm	1	2	3	4	5
2.	Competent	1	2	3	4	5
3.	Confident	1	2	3	4	5
4.	Content	1	2	3	4	5
5.	Excited	1	2	3	4	5
6.	Gratitude	1	2	3	4	5
7.	Guilty	1	2	3	4	5
8.	Happy	1	2	3	4	5
9.	Proud	1	2	3	4	5
10.	Relief	1	2	3	4	5
11.	Satisfied	1	2	3	4	5
12.	Surprised	1	2	3	4	5
13.	Thankful	1	2	3	4	5

Appendix J

Intrinsic Motivation

DIRECTIONS

Please use the response key below to indicate the extent to which you agree or disagree with each statement by selecting a number from 1 to 7. Be sure that the number you circle is for the statement you are answering. Choose only one answer for each statement.

1 Strongly Agree	2	3	4	5	6	7 Strongly Disagree

1.	This was a very interesting simulation.	1	2	3	4	5	6	7
2.	I thought the simulation was a waste of time.	1	2	3	4	5	6	7
3.	I enjoyed the simulation very much.	1	2	3	4	5	6	7
4.	I thought the simulation was boring.	1	2	3	4	5	6	7
5.	The simulation was fun to play.	1	2	3	4	5	6	7

Appendix K

Study Description for Participants

The study you have participated in is part of a doctoral dissertation being conducted at the Baruch College Psychology department of The City University of New York by Anna M. Tedesco under the supervision of Professor Donna E. Thompson. Below is a brief description of the study and some background information. Should you have any questions about this study or about your participation, Ms. Tedesco can be reached at (212) 387-1530 and Dr. Thompson can be reached at (212) 387-1535.

Background

In work settings we frequently observe different individuals react differently when they encounter similar situations, including positive and negative events, setbacks, successes, and failures. For example, some view a difficult situation as a challenge to overcome, while others view it as an indication of their low ability. These different beliefs also lead to differences in mood and behavior. An approach to motivation and personality, which links how people behave to underlying psychological processes (e.g., thoughts about oneself or expectations for the future), has been advanced by several researchers (Dweck, 1986; Dweck, Chiu, & Hong, 1995; Dweck, Hong, & Chiu, 1993; Dweck & Leggett, 1988; Elliott & Dweck, 1988). According to this perspective, behavior is determined by factors internal to the person and factors, external to the person, that are in the environment (Kreitner & Luthans, 1984).

The Present Study

The purpose of this study is to examine the impact of individuals' achievement goal orientation on intrinsic motivation and performance. This relationship is complex in that it is moderated by perceived ability and mediated by various affective, behavioral and cognitive self-regulatory processes. It is based on a theoretical model of motivation and personality, which was

developed empirically from studies of children's reactions to failure in natural and experimental settings. The Model accords a central role to emotional, behavioral and thought processes. Thus, theories of self-regulation are incorporated.

This study contributes to achievement motivation, self-regulation, and simulation and gaming literatures and applications. In terms of gaming, the process can be used to show how different factors, including goals, implicit theories, perceived ability, instructor presentation and instruction and simulation administration impact performance and learning efficacy. The findings can impact several organizational practices, including training, performance feedback and appraisal, and work design.

If you are interested in reading more about this area, below are some references:

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IMAGE EVALUATION
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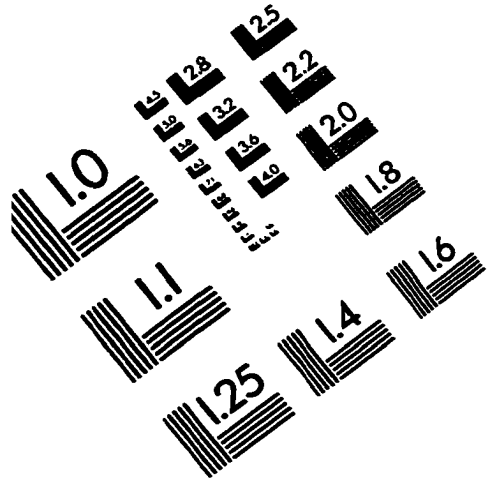

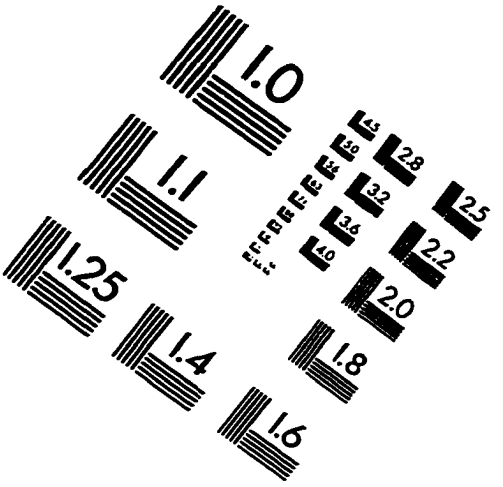

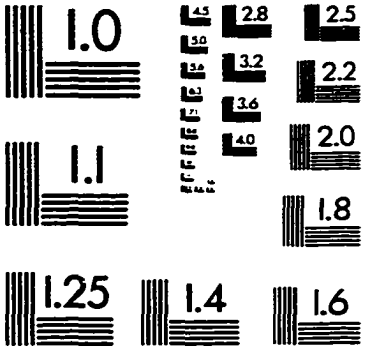

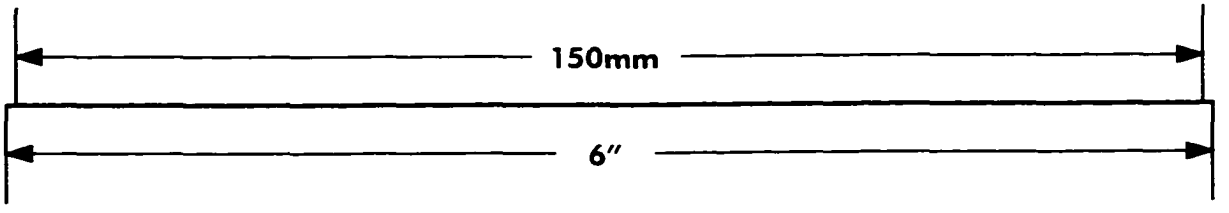

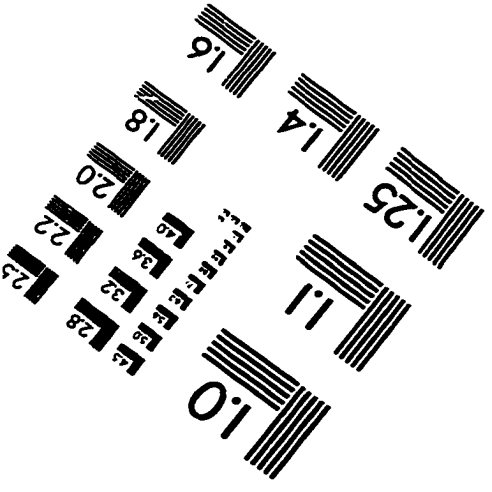

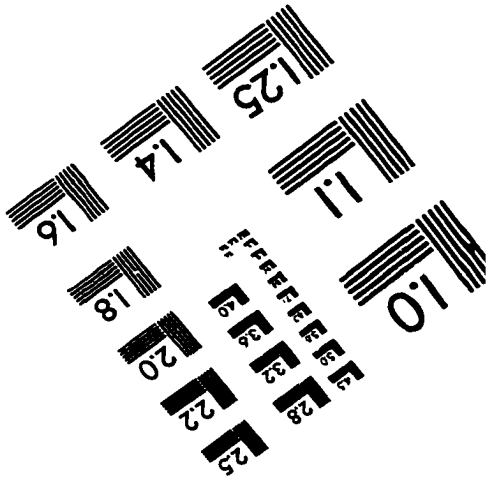

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