A Trait Model of Decision Making: Examining the Effects of Goal Orientation

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ABSTRACT. C. S. Dweck and E. L. Leggett (1988) have suggested that people's implicit theories about themselves and others, and about the properties of places, things, and the world in general, may predict their cognitive, affective, and behavioral dispositions. This author started from Dweck and Leggett's goal-orientation concept and analyzed its implications for individual thinking and individual decision making. The decision-making process was sorted into two types, Type E and Type N, which parallel H. A. Simon's (1977) model of programmed and nonprogrammed decisions and C. E. Lindblom's (1959) model of entity versus incremental decisions. Next, the author described an individual-level model of the antecedents and consequences of the decision-making process. That model also specifies a concept of individual technology that carries implications for microlevel processes such as delegation and formalization. Implications for future research are discussed.

Key words: control theory, decision making, decision process, goal orientation

INDIVIDUAL CHARACTERISTICS have important effects on how people adapt to their environments (cf. Butler, 1992, 1993; Dweck & Leggett, 1988). How individuals orient themselves toward goals, for example, has been consistently shown to influence the behavior and self-regulation (to name only a few groups) of children (Diener & Dweck, 1978, 1980), students (R. B. Miller, Behrens, Greene, & Newman, 1993), and salespersons (Sujan, Weitz, & Kumar, 1994). Because people differ in how they prioritize goals, how they seek feedback, and how they regulate themselves, one can enhance models of human motivation and decision making by incorporating variables that reflect these indi-

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individual differences. Accordingly, in this article I describe what amounts to a trait model of decision making.

My principal goal is to propose such a trait model of decision making: one that depicts how individual differences influence decision makers' cognitive processes, how decision makers select among alternatives, and how decision makers solicit feedback. Goal orientation is the model's focus variable for individual differences. It has received a great deal of attention in the areas of personality, social psychology, education, and organizational behavior for the effect it has on an individual's motivation and self-regulation.

The Meanings of Decision

Though research on decision making has long been an occupation of scholars and practitioners alike, there is still room for understanding the processes by which decisions are made. Interest in behavioral decision theory (cf. Beach, 1997) reflects a trend among decision theorists away from the traditional normative, rationalist perspectives. Indeed, students of decision making have been shifting from a "focus on choice, per se, to ways human actors interact with and interpret their situations" (Hunt, Krzystalik, Meindl, & Yousry, 1989, p. 437). Theorists now tend to look on decision making as exercises in human judgment (e.g., Hogarth, 1987), as "thinking practices" (e.g., Weick, 1979, p. 61), or as "cognitive and symbolic processes by which actors organize action" (Hunt, 1988, p. 17).

Although there remain disagreements and even controversies over the very definition of decision making, in this article I follow the essentials of Harrison's (1981) temporal definition (see also, Hunt, 1988) of a decision:

... a moment in an ongoing process of evaluating alternatives for meeting an objective, at which expectations about a particular course of action impel the decision maker to select that course of action most likely to result in attaining the objective. (Harrison, 1981, p. 3)

Corresponding to the progress in the field of cognitive science in the past decade, the evolution of control theory (borrowed originally from mechanical engineering and often referred to as cybernetics) has proven helpful in understanding human motivation and decision making (Klein, 1989; Lord & Kernan, 1987; Powers, 1973).

Decision Making and Human Self-Regulation

Control theory postulates that there is a hierarchy of negative feedback loops in the minds of decision makers (see Carver & Scheier, 1981; Klein, 1989; Lord & Kernan, 1987; G. A. Miller, Galanter, & Pribram, 1960). The feedback loops are characterized as negative to reflect that the response to an error is a reduction of that error (Powers, 1973). As Powers stated, "What an organism senses affects
what it does, and what it does affects what it senses” (p. 41). He also observed, “Behavior can be seen as purposive or goal-directed if it is recognized that the purpose of any act is to resist disturbances and that the reference condition describes the goal of behavior” (p. 54). Hence, a complete model of human behavior involves a feedback system and a hierarchy of goals. The output from these feedback loops, in turn, specifies the reference values for subordinate-level loops. Control theorists argue that decision makers (consciously or, more often, not) compare incoming stimuli with implicit reference standards or goal states, and control theorists further suggest that goals are organized hierarchically so that higher level goals control lower level ones.

Within a goal hierarchy, a person may respond strategically to discrepancies in ways calculated to facilitate higher order goals; in any case, these discrepancies, once sensed, trigger behaviors that are aimed at reducing the discrepancies by harmonizing sensory inputs with the relevant reference point. What is postulated, therefore, is a more or less complex, normative, discrepancy-driven, behavioral-control system that operates continuously to regulate human choices and actions.

Control theory imagines individuals simultaneously monitoring multiple goals while seeking to maintain a form of dynamic homeostasis, with decision makers switching their attention and motivation among various task demands. For example, a marketing manager might set a goal for sales volume while at the same time pursuing some other goal: for instance, conducting a training course for sales personnel. Until the desired level of sales volume is reached, its pursuit will continue; at the same time, the training activity will also continue until it is completed as well. Because in the real world, the reduction of discrepancies is a dynamic and ongoing process occurring across different performance periods, the goals of earlier stages will affect the achievement of goals in later stages. The result is that current goals will later serve as criteria for future achievement.

**Wofford and Goodwin’s Model of Decision Making**

On the basis of control theory, Wofford and Goodwin (1990) proposed a model to explain the cognitive processes of decision making. Their model starts with a decision maker managing certain information, which is followed by a temporal strategic process of encoding it, storing it in memory, and retrieving it, which is then followed by the decision making or choice, which is finally followed by eventual feedback to the initial attentional state.

As Wofford and Goodwin (1990) suggested, cognitive processes are the immediate precursors of decision making or choosing. These contain cognitive knowledge structures in memory that describe the sequencing of events in familiar situations; these sequences are often referred to as scripts (Abelson, 1981; Lord & Kernan, 1987). If the decision maker detects no discrepancy between the incoming stimuli and the existing script, he or she will simply perform accord-
ing to the script without further investigation. If there is no match between the incoming stimuli and the script, however, the individual will likely further investigate the situation. When such unexpected discrepancies are detected, the decision maker might refer to a previous script or might choose another script. When negative feedback persists, alternative strategies will be examined.

Wofford and Goodwin (1990) also proposed that positive and negative feedback (i.e., behavioral outcomes that either exceeded or fell short of, respectively, a referent standard)\(^1\) have different effects on cognitive processing. They suggested that decision makers, when faced with negative feedback, tend to engage in more script processing, evaluation, and attribution and that they might even choose, depending on the character of the feedback, a different decision style. When the incoming information is positive, cognitive processing tends to be less thorough and systematic than it is when the incoming information is negative, which tends to stimulate case processing that is more deliberate, careful, and analytic.

Isen, Means, Patrick, and Nowicki (1982) reported that negative affective states tend to complicate cognitive processing, whereas a positive affective state is generally associated with simpler cognitive heuristics. Thus, the affective characteristics—positive or negative—that decision makers’ attribute to inputs have important implications for cognitive processing (cf. Dunegan, 1993).

**Types of Managerial Decision Processes**

Simon (1977) suggested that, within organizations, standard operating procedures and programmed responses for specific situations are in fact forms of decision making. When managers confront a task, they are likely to compare features of the immediate situation with some well-established organizational rules or procedures. If there are matches (or fair approximations), the resulting decision process will be largely constrained and will tend to consist of a sequence of more or less programmed matching. But when there are no organizationally established rules or procedures, decision makers are left on their own. In such cases, they might create new standards or operating procedures to deal with the equivocal, ill-defined situation. Or they may choose to respond to such equivocal situations on a case-by-case basis instead of deriving a general solution.

**Type E Versus Type N Decision Process**

Drawing on Wofford and Goodwin’s (1990) typology of cognitive-processes, I describe an individual-level model of the antecedents and consequences of decision processes, one that also describes a concept of individual technology

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\(^{1}\)In cybernetics, "positive" feedback creates an enlargement of the discrepancy in which a positive feedback loop attempts to maximize distance from a standard, rather than to match it. To avoid confusion, however, we adopted Klein’s (1989) definitions to accommodate the more common organizational behavior usage of the two terms: Positive feedback refers to “information denoting one has exceeded a goal, negative feedback to information indicating the standard was not attained” (p. 152).
that carries implications for microlevel processes such as delegation and formalization.

The three paths of cognitive processing Wofford and Goodwin (1990) proposed are Path 1, in which the feedback is as expected, prompting the use of a previous script; Path 2, in which there is an unexpected situation with minor discrepancies, prompting the use of another existing script; and Path 3, in which there is an unexpected situation with persistent discrepancies, prompting exploration of alternative strategies. Accordingly, in this investigation I characterize Path 1 and Path 2 as Type E (for existing script) decision processes and Path 3 as a Type N (for new strategy) decision process. The forthcoming investigation is structured around this dual characterization.

The Type E decision process is characterized by schemas that occur as expected and by familiar routines, and that occur under consistent conditions and previously used scripts. The Type N decision process, on the other hand, is marked by new tasks, unexpected conditions, major gaps between goals and performance, and the application of new strategies. This classification roughly parallels the aforementioned decision models of Simon (programmed and nonprogrammed; 1977) and Lindblom (entity vs. incremental; 1959).

The Type E decision process of a manager refers to an ongoing evaluation of expected or familiar schema-consistent information for meeting a performance goal and of a search for and retrieval from memory of those strategies most likely to result in the goal’s attainment. The Type N decision process of a manager, on the other hand, denotes an ongoing process of evaluating either unanticipated discrepancies between goals and performance or a new task condition for meeting a learning goal and inventing new strategies most likely to result in goal attainment. This decision process typology is the basis for the forthcoming trait model of decision making.

A Trait Model of Decision Making

As previously noted, control theory assumes that decision makers, when perceiving discrepancies between their standards and incoming stimuli, strive to reduce these and to maintain a homeostatic system state. Klein (1989), a control theorist, proposed a control-theory model of work motivation that specifies an interrelationship among such variables as goals, feedback, and attributions. Klein, nevertheless, failed to theorize how individual characteristics might affect their subsequent decision processes. Using a control theory frame, in this investigation, I propose a trait model of decision making. In this study I borrow concepts from Wofford and Goodwin’s (1990) model on decision makers’ cognitive processes and add the idea that decision makers’ beliefs about the causes of their performance, relative to the goals they set, might influence their reactions to any perceived discrepancies (cf. Carver & Scheier, 1981; Klein, 1989). Therefore, how people understand the reasons for their performance arguably plays a significant role in their decision making.
Goal orientation, a trait variable, is posited as an antecedent of decision processes. Simply put, the idea is that decision makers with different goal orientations might be expected to exhibit varying motivational tendencies that induce varying decision processes, as modeled in Figure 1.

According to this model, goal orientation has a direct effect on cognitive decision processes that mediate between inputs to and outcomes (i.e., choices among alternatives) from decision processes. As suggested above, two types of decision processes can be identified: Type E and Type N. In addition, goal orientation affects decision makers’ feedback-seeking behavior, and perceived competence moderates the relationship between goal orientation and feedback seeking. A more detailed treatment of these ideas follows.

**Goal Orientation**

Decision makers’ goal frameworks set the terms for both their interpretations of stimuli and the information that they use to define and clarify them. Because situational goal priorities might vary, different goals might be aroused, even when decision makers face nominally identical stimuli; and, therefore, decision makers’ responses to similar problems might vary.

The issue of goal orientation (Dweck & Legget, 1988) has received increased attention during the past decade in such disciplines as personality (Colquitt & Simmering, 1998), social psychology (Ryska & Yin, 1999), education (Wolters, 1998), counseling (Kivlinhan, Schuetz, & Kardash, 1998), organizational behavior (VandeWalle & Cummings, 1997), and marketing (Kohli, Sher-
vani, & Challagalla, 1998; Sujan et al., 1994). Strong empirical support for the utility of the trait construct suggests that goal orientation may affect decision processes via cognitive processing, searching for information, and goal prioritizing (cf. Ford, Smith, & Weissbein, 1998).

Dweck and his associates identified two types of goal orientations: performance-goal orientation and learning-goal orientation (Diener & Dweck, 1978, 1980; Dweck & Bempechat, 1983; Dweck & Leggett, 1988). A performance-goal orientation stresses the demonstration and validation of competence, whereas a learning-goal orientation emphasizes the development of competence by acquiring new skills and mastering new situations. Dweck and Leggett (1988) argued that people orient to goals differently because of implicit assumptions and theories about intelligence. Specifically, those individuals oriented toward performance as their goal presumably conceive of their intelligence as a fixed quantity, whereas those oriented toward learning as their goal conceive of their intelligence as a malleable characteristic.

Therefore, a performance-goal orientation is “a focus on one’s ability and sense of self-worth” (Ames, 1992, p. 262). A learning-goal orientation, on the other hand, is essentially “a belief that effort and outcome co-vary; this attributional belief sustains achievement-directed behavior over time” (Ames, p. 262).

Dweck and Leggett (1988) extensively reported on the varying effects these two orientations have on both solving problems and acquiring information. For instance, Diener and Dweck (1978, 1980) reported that, when confronted with difficult problems, helpless (i.e., those with performance-goal orientations) children quickly attributed their failures to personal inadequacy, spontaneously citing their deficiencies in intelligence, memory, or problem-solving ability. Furthermore, these helpless children expressed a pronounced negativity, as characterized by boredom with the problems or by anxiety over their performance. Finally, these children showed clear declines in both the level of effectiveness of their problem solving and in their performance.

On the other hand, children whose tendency was to master a situation (i.e., those with learning-goal orientations), when confronted with these same problems, did not offer attributions for their failure. Instead, they seemed to view the unsolved problems as challenges to be overcome through effort; to that end, they engaged in extensive, solution-oriented self-instruction and self-monitoring, which included both the cognitive and motivational aspects of the task at hand. In addition to planning specific strategies, these children directed themselves to exert effort or to concentrate, and then they monitored their levels of effort or attention. Moreover, these children remained optimistic that their efforts would be fruitful, and they maintained a positive orientation toward the tasks, even the difficult ones. Finally, Diener and Dweck (1978) reported that, over the failure trials, these children, oriented toward task mastery as they were, actually taught themselves new and more sophisticated strategies.

The relationship between goal-orientation and self-regulation is supported
by several later studies. Ames and Archer (1988), for instance, found that students with learning goals are much more likely to report engaging in self-regulatory activities such as using cognitive strategies, planning, monitoring, and help-seeking than are students with performance goals. Moreover, Sujan et al. (1994) found that salespersons’ goal orientations correlated with whether or not they were “working smart”: In other words, salespersons with learning-goal orientations made greater self-regulatory efforts to improve their sales capabilities than did salespersons who were performance-oriented.

**Seeking Feedback**

Goal orientation not only influences an individual’s general self-regulation, but also, specifically, his or her propensity for seeking feedback. Feedback can be obtained through inquiry (directly asking others) or through monitoring (observing the environment and others) (Ashford & Cummings, 1983). When seeking feedback, decision makers risk getting negative feedback that, although helpful in identifying inefficiencies, can be an unpleasant experience. Individuals’ goal preferences might help to explain why people choose or do not choose to seek feedback.

Drawing on research demonstrating that one’s goal orientation affects one’s level of self-regulation, VandeWalle and Cummings (1997) directly tested the influence of goal orientation on feedback seeking. Their findings supported the idea that goal orientation had an effect on seeking feedback: Specifically, they found that there is a negative relationship between feedback seeking and a performance-goal orientation, and that there is a positive relationship between feedback seeking and a learning-goal orientation.

VandeWalle and Cummings (1997) argued that the two types of goal orientation affected the perceived cost and value of seeking feedback. They argued that there are at least two kinds of perceived costs—ego cost and self-presentation cost—to seeking feedback. One incurs ego cost by hearing negative opinions about oneself, and one incurs self-presentation cost by exposing one’s uncertainty and need for help (Ashford, 1989). Individuals oriented toward performance goals tend to perceive of their ability as primarily a fixed attribute, and they therefore tend to view feedback on their performance as an evaluation of their fixed ability levels. Seeking feedback puts them at risk of getting negative feedback, and is therefore apt to be considered by these individuals as potentially threatening to their egos. Moreover, individuals who are oriented toward performance goals incur higher self-presentation costs; because they view exerting effort as an indicator of low ability, seeking feedback, which is a considerable expenditure of effort, might therefore draw attention to their poor performance and thereby undermine their attempts at demonstrating competence.

In contrast, those oriented toward learning goals incur lower ego costs when they seek feedback because they see their ability as a malleable attribute and
subsequently perceive negative feedback as a diagnostic tool that helps them to enhance their ability. They also incur lower self-presentation costs when seeking advice because they do not consider asking for help as a poor reflection of their ability.

VandeWalle and Cummings (1997) further argued that those with a learning-goal orientation view feedback as, in fact, valuable, because they hold an incremental theory about ability and might utilize feedback to incrementally improve their ability. Those with a performance-goal orientation, on the other hand, are skeptical about the utility of feedback for enhancing either performance or ability. VandeWalle and Cummings’s data supported their prediction on the relationship between goal orientation and feedback seeking.

**Perceived Competence**

The self-perception of decision makers regarding their competence to make decisions might affect the relationship between goal orientation and feedback seeking as well. Specifically, among performance-oriented decision makers, there might be differences in this relationship that vary according to decision makers’ levels of perceived competence to perform the decision task.

Performance-oriented decision makers who have a low opinion of their level of competence might be especially reluctant to seek feedback, so that they can avoid the risk of receiving a negative opinion. Performance-oriented decision makers with a more positive perception of their competence, however, might have a stronger tendency to seek feedback than those with low opinions of their competency, because, in seeking feedback, those with higher self-perceptions believe they incur a comparatively smaller risk of receiving a negative opinion about their competence.

For decision makers with a performance-goal orientation, therefore, their self-perception of competence at making a decision moderates the relationship between goal orientation and feedback seeking. However, the same moderating effect is less significant for decision makers with a learning-goal orientation. Because learning-oriented people perceive ability as a malleable attribute and negative feedback as a tool for developing or enhancing their ability, they seek feedback regardless of their perceived competence for making the decision.

From a somewhat different standpoint, Butler (1992) argued that, when a person is ego involved, he or she tends to seek information for the sake of self-enhancement. When a person is task involved, however, he or she might seek out self-appraisal both to learn and to solve a task. Thus, a task-induced search promotes self-appraisal, which might in turn contribute to self-enhancement.

Butler (1992, 1993) argued that an ego-involved person tends to seek information for the sake of self-enhancement but that a task-involved person might tend to seek out self-appraisal for the purposes of learning and task mastery. Thus, it appears that a task-induced search for information leads to self-appraisal
that, in turn, eventually contributes to self-enhancement. Butler (1993) also
found that low-skilled individuals, when ego involved, seek less feedback than
when they are task involved. These findings parallel those of Nicholls (1984),
who showed that low-skilled individuals, when ego involved, seek less feedback
than when they are task involved. These findings are also consistent with those
of Butler, who showed that perceptual competence moderated the relationship
among ego involvement and task choice, persistence, and satisfaction, but that
perceptual competence did not moderate the relationship among task involve-
ment and other criterion variables.

Adaptation Versus Maladaptation

Interestingly, both feedback-seeking and goal-orientation theorists cite individ-
uals’ adaptations to the environment as key to their theories. Ashford (1986),
citing White (1959), suggested that to achieve mastery, individuals engage in a
continuous exploration of an environment until they understand it. The re-
searchers further suggested that exploring, interpreting, and organizing behaviors
could all be considered within the general category of adaptation.

Tsui, Ashford, Clair, and Xin (1995) proposed that, compared with what
they called esteem-oriented, discrepancy-reduction strategies, effectiveness-orien-
ted strategies are more adaptive to changing organizational contexts. (These
terms parallel Katz and Kahn’s, 1966, maladaptive and adaptive.) Tsui et al. sug-
gested that managers who aim to enhance effectiveness through learning are bet-
ter off in an environment that requires flexibility. Under demands from different
constituencies (both inside and outside the organization), such managers devel-
op coping strategies. Managers whose main goals are to protect their self-esteem,
on the other hand, are less likely to adapt to the demands of different constitu-
encies, the consequence of which is maladaptation.

In a somewhat similar vein, drawing on the contrasting theories of Freud and
Jung, Dweck and Leggett (1988) conceived of the two types of goal orientation
as two types of self-concept and two sources of self-esteem. They suggested that,
for performance-goal-oriented entity theorists, outcomes indicating the adequa-
cy of one’s traits and qualities will enhance and maintain one’s self-esteem. For
learning-goal-oriented incremental theorists, on the other hand, one’s self-esteem
is enhanced by a pursuit and mastery of challenging tasks.

Propositions Derived

As mentioned earlier, performance-goal-oriented decision makers
(PGODMs) prefer decisions that demonstrate their competence; for these indi-
viduals, the main goal of the decision task is to prove their ability. Learning-goal-
oriented decision makers (LGODMs), on the other hand, orient their decisions
and choices to develop their competence; for these individuals, the main goal of
the decision task is to improve their ability.
Goal Orientation and Decision Process

To infer from the preceding arguments and the control-theory model, the goal orientation of a decision maker might influence his or her decision-making process; PGODMs prefer to demonstrate their ability in a familiar cognitive process, whereas LGODMs prefer challenges and novel processes. Therefore, when facing a task situation, PGODMs are likely to search for well-established rules or procedures for a solution that exhibit a sequence of programmed matching. In other words, PGODMs prefer a Type E decision process, characterized by expected schemas, familiar routines, and previously used scripts. The decision making that results is simplified, involving cognitive processing that is less thorough and script processing that is more automatic. In an organizational context, PGODMs prefer a Type E decision process, one that typically is bureaucratic with fixed rules; in such organizations, decision makers are accustomed to routine and programmed decision processes.

LGODMs, on the other hand, tend to create new rules or procedures in response to equivocal conditions and therefore prefer a Type N decision process, characterized by new tasks, unexpected conditions, and new plans or strategies. The decision making that results is complex, involving cognitive processing that is more thorough and careful and script processing that is more controlled. Such a Type N decision process is more likely to be found in a flexible organizational structure in which change is common and in which decision makers are not used to routine or programmed decisions, but work instead in an environment characterized by novelty and variety.

Given these characterizations, the following proposition is posited:

Proposition 1. PGODMs prefer Type E decision processes, whereas LGODMs prefer Type N decision processes.

Goal Orientation and Feedback Seeking

Furthermore, according to control theory, there exists in the minds of decision makers a figurative hierarchy of negative feedback loops, with higher level goals controlling lower level goals. Decision makers might respond to discrepancies in various ways in order to maintain the higher order goals; the higher level goals for those with a performance orientation are to demonstrate their competence at work, whereas the higher level goals for those with a learning orientation are to further develop their competence and skill. The goals of self-assessment for the two types of decision makers might be different, however; PGODMs assess their goals in terms of ego defense, whereas LGODMs assess their goals in terms of task accomplishment.

According to VandeWalle and Cummings (1997), the goal orientation of a decision maker might have an impact on how he or she chooses to seek feedback. PGODMs tend to perceive a higher cost for and a lower value from seeking feed-
back, and therefore they do less of it. LGODMs, on the other hand, perceive a lower cost for and a higher value from seeking feedback, and so they do more of it. Hence, the following proposition is posited:

**Proposition 2.** PGODMs perceive a higher cost for and a lower value from seeking feedback than LGODMs do, and so they do less of it.

**Perceptual Competence**

As mentioned above, there might be a moderating effect from perceptual competence on decision making among PGODMs. Hence, Proposition 2 needs certain modifications to accommodate these potential moderating effects. PGODMs, when they have low levels of self-perceived competence, tend to engage in less feedback seeking, script processing, evaluation, and attribution than do PGODMs who have high levels of self-perceived competence. For LGODMs, however, there is no difference in the levels of feedback seeking, script processing, evaluation, and attribution found between individuals with low and high levels of self-perceived competence. Hence, a third proposition is posited:

**Proposition 3.** Among PGODMs, low-perceptual-competence individuals seek less feedback than their high-perceptual-competence counterparts.

**Feedback Attributes**

As mentioned earlier, performance-goal-oriented people prefer to obtain information that is favorable toward them, and they avoid getting negative information. On the other hand, learning-goal-oriented people prefer dealing with new problems and might seek both positive and negative information; both kinds of information are valuable to them and help them in their future environmental adaptation. According to Butler (1993), “people who have something to learn will be more likely to request information relevant to self-improvement, to learn from it, and thus to improve their performance in task- than in ego-involving settings” (p. 20). Hence, it is argued that negative information exerts a stronger effect on LGODMs than it does on PGODMs: That is, LGODMs will engage in more in-depth cognitive processing in the face of negative information. Therefore, a fourth proposition is posited:

**Proposition 4.** Negative information exerts a stronger effect on decision processes among LGODMs than among PGODMs.

**Decision Choice and Adaptation**

Finally, decision makers choose among alternatives, and these final choices might be influenced by both their feedback-seeking and decision-making
processes. Following the arguments made above, choices among alternatives might serve either a demand from the environment or needs arising from an individual's own self-esteem. Note, however, that only the former choice is likely to be considered effective to an organization and its various constituencies. Hence, a fifth proposition is posited:

**Proposition 5.** Esteem-oriented decision choices meet the needs of a decision maker, whereas effectiveness-oriented decision choices meet the needs of organizational constituencies.

**Implications for Future Research**

To date, few studies have directly examined trait effects on individual decision making. As Simon (1992) observed, the study of human behavior is not “a logic study of optimization but an empirical study of the side conditions that place limits on the approach to the optimum” (p. 160). Suitable research to evaluate the validity and utility of the trait model of decision making proposed in this article is needed. To this end, two strategies may be fruitful: (a) an analysis of decision makers’ verbal protocols (cf. Ericsson & Simon, 1993) and (b) a “decision map” approach (cf. Hunt & Magenau, 1984).

**The Verbal Protocol Approach**

Verbal protocols are seen as valid “data” by many decision scientists (see Ericsson & Simon, 1993). The method involves asking participants to think out loud during an experimental task. Think-aloud protocols (and eye-movement records) contain rich detail on decision behavior. An experimenter might use a scheme for coding a person’s decision processes in order to narrow the data set while focusing on a particular theoretical framework.

One can use verbal protocols to assess how individual differences affect decision processes and outcomes. Isenberg (1984), for instance, used the think-aloud method to examine how managers and students solved business cases. Isenberg developed a coding scheme for context analysis and traced participants’ cognitive processes underlying their decision making; information focus, clarification, causal reasoning, and explicit inference are examples of coding categories he used. Wofford and Goodwin (1990) also used verbal protocols to assess the effects of feedback on cognitive processing and subjects’ choice of decision style.

To examine the trait model proposed in this article, researchers need to develop decision tasks that will differentiate among individual motivational differences. These tasks must elicit participants’ achievement goals, activate a decision process relative to the goals, and arrive at final choices that demonstrate their goals. Researchers would expect to find relationships between participants’ goal orientations and their decision processes. Many times participants do not feel “in
role,” and they consider the decision tasks artificial. Consequently, they perform
decision analyses simply to satisfy experimenters’ requests, using “objective” ap-
proaches to problems and making decisions as they imagine these “should” be
made and not as they themselves would actually make them.

One possible way to allow participants to feel that something is actually at
stake in an experiment is to inform them that their final decisions will have real
consequences to the focal person or company. Another way is to reward them.
For instance, if the decision tasks were about a company’s operations, partici-
pants could be informed, “Your decisions will be taken as key advice to the
company. Please think carefully just as if you are actually the person in the case.” Or
they could be told that the “correct” answers would be revealed at the end of the
experiment, answers that have been provided by experts or obtained from high-
performance companies. If the participants make high-quality decisions, they
could receive compensation, for instance, $20.00.

A well-designed coding scheme—one with categories of decision behavior
operationalized from theoretical constructs and then subdivided into more de-
tailed subcategories—is needed for hypothesis testing. For the model proposed
here, one might develop a coding scheme for Type E or Type N decision pro-
cesses. Consider, for instance, Bill, a marketing manager undergoing a career de-
cision-making process (see Figure 2). The decision task may induce a variety of
cognitive processes from the participant that may be evaluated according to the
complexity (versus simplicity) of the processes, their simultaneity (versus se-
quentiality), their orientation toward the future (versus focus on the status quo),
and perhaps other criteria (see Appendix). After measuring the variables in the
model, statistical analyses could then proceed.

The Task-Analysis Strategy

Another research approach might be one that is similar to the task-analysis
scheme used by Hunt and Magenau (1984). This naturalistic strategy assesses de-
cisions as they unfold. It also embraces a broader context in that the actual de-
cision might involve a “roster of actors” in addition to the decision maker. These
actors might represent different constituencies in an organization and have varying
interests and goals.

Briefly, Hunt and Magenau’s (1984) task-analysis approach identifies two
units of decision structure, events and episodes, and a roster of actors who are in-
volved in each. There are two kinds of events: exogenous and endogenous. Exoge-
nous events involve the environment in which the decision making is occurring,
and endogenous events involve activities that relate directly to the decisions being
made. Again, using Bill’s case as an example, assume that he received a poor per-
formance review result at a certain time, which in turn triggered his career deci-
sion-making process. A few days after the poor review, a friend of Bill’s, not know-
ing anything about the incident, happens to casually mention a promising job op-
portunity elsewhere. In the meantime, Bill has sought advice from another friend. Considering the information thus far, a researcher should be able to track the chronology of the events. After dating these events, the researcher might label the acquaintance’s mention of the job opportunity an exogenous event because it was not prompted by Bill’s asking advice, and the researcher might label the subsequent event as endogenous because it was prompted by Bill’s asking advice.

The second unit of decision structure, the episode, consists of three or more interrelated endogenous events: a starter event, an instrumental event(s), and a terminal event. A starter event sets in motion the decision making. For instance, in Bill’s case the starter event is the meeting with his supervisor, at which he was informed about his performance problem. Instrumental events are activities or behaviors that are directed toward achieving some apparent goal or end state. Bill’s meeting with his friend for advice can be considered an instrumental event if it fulfills Bill’s goals (e.g., getting job-related information or seeking emotional support). Finally, a terminal event serves as the final endpoint for some particular activity. For instance, in Bill’s case the terminal event would be finding a new job or, after a period of time of putting forth extra effort at his current company, receiving a better performance review. Either of these—a new job or a better performance review—could be termination events of the decision process.
Reconstruct a Decision Process

Identifying events and episodes depends on the purposes of the study and requires judgment by the researcher. Here, the goal is to demonstrate a decision-making process that is related to a decision maker’s goal orientations. Because researchers cannot observe decision makers’ actual cognitive process, one alternative is to reconstruct the process retrospectively. For example, in Bill’s case, he could have talked with someone about his problem, could have gone elsewhere in search of a job opportunity, or could have taken night-school courses to prepare himself for a possible career transition. The researcher needs to locate the events and episodes that are related to the particular decision-making process.

As in the case of Bill’s career decision making, the researcher might want to record any activity that is directly or indirectly related to a decision to make sure that the reconstruction of the process is valid. The researcher would want to make sure that no important information was missing that might lead to a misinterpretation of the process. It is, of course, always difficult to observe events and episodes on the spot, especially when informants still are puzzling over the problem.

Moreover, the research process itself can be a source of contamination; that is, the circumstances of the study might influence the informant’s decision making. An alternative method common in studies of innovation, business policy formulation, and organizational change is the use of retrospective reports. An advantage of this method is that, in a relatively efficient way, the researcher can obtain data that otherwise would be very costly to collect. A possible weakness with retrospective reports is their instability; informants simply might not provide the same information at different points in time (Golden, 1992).

There are, however, methods that can help to ensure the validity of retrospective data. The researcher should use multiple, knowledgeable informants and ask them about concrete events or facts rather than past opinions. In addition, informants should not be asked to recall events from the distant past, and the confidentiality of the data should be ensured. By using a free format rather than a forced one, the researcher should permit informants the opportunity to skip questions about things they do not remember (C. C. Miller, Cardinal, & Glick, 1997).

Once events and episodes are identified, a researcher can identify a roster of actors involved in the focal decision task. Rosters can then be further coded for organizational levels, frequency of interaction, forms of interaction, and other relevant elements. The end product is a chart or reconstruction of the decision process as a decision map; Figure 2 is a brief decision map of Bill’s career decision-making process. On the map’s vertical axis are the organizations and actors related to the process: the focal company (including Bill’s manager and colleagues), other companies (ones that provide job opportunities for Bill), and other actors (friends and relatives). The horizontal axis allows the time and date of each event—the chronology of the decision-making process—to be plotted. From such a map, a detailed analysis of the possible relationships between trait
(e.g., goal orientation) and decision process, or between decision process and decision outcome, can be derived.

Thus, there are two avenues for research programs on managerial decision making that deserve attention from organizational behavior and decision scientists: the verbal protocol approach and the task-analysis strategy. The first approach is more artificial and experimental, whereas the second approach is more naturalistic and descriptive. Each method has its advantages as a mechanism for identifying causal effect. An experimental approach lends itself to controlling confounding variables more than a naturalistic approach does, but a real-world exercise such as that afforded by the latter might be more likely to engage decision makers. In fact, the two methods are complementary and may be used alone or in combination.

**Implications for Individual-Level Technology and Management**

The trait model of decision making described in this article implies a model of individual-level technology. The use of the term *individual technology* tends to equate to the “knowledge” encoded in the cognitive models of a decision maker, and such technology might offer a point of departure for organizing.

Research on technology has been prevalent since the 1960s (e.g., Hunt, 1970; Perrow, 1967; Woodward, 1965). The strongest empirical evidence for technology–structure relationships has been at the subunit level, however (see a review by Fry, 1982). Very few theoretical constructs and models of technology have been developed at the individual level (e.g., Hrebinjak, 1974; Mohr, 1971). Hence, it might well be that the lack of empirical support for relationships between technology (e.g., task routineness) and structure (e.g., subordinate discretion) is attributable to individual differences rather than the technology itself. As argued previously, individual traits might be a direct cause behind decision-making and feedback-seeking processes. Individual traits, and their associated cognitive processes, surely play a crucial role in individual technology.

Goal orientation, as has been shown, might trigger a diagnostic process that differentiates situations as “analyzable” and “nonanalyzable” (Perrow, 1967) or as “manageable” and “not manageable” (Mohr, 1971). In other words, goal orientation is presumed to elicit a decision maker’s organizing process as either a standardized or a nonstandardized routine. The former might be characterized as a “formalization” at the individual level and the latter characterized as a “nonformalization.”

Similarly, the degree of subordinate delegation might also be derived from individual technology. Enacting a situation that is perceived to be analyzable, along with a cognitively standard procedure for solving it, makes subordinate delegation possible, efficient, or both. On the other hand, when a situation that is perceived to be nonanalyzable is accompanied by a cognitively nonstandardized strategy, enacting the situation will also make subordinate delegation possible, effective, or both.
Final Remarks

“Learning” is a common slogan in modern society, and along with it, the idea that “learning never ends.” The themes of this paper are clearly consonant with the idea that learning is a requisite for success in today’s business world and elsewhere in society. If the propositions advanced in this article are valid, however, then most organizational human resource functions are in need of redesign.

In the ever-changing environment of the 2000s, companies will arguably be better off if they select employees with learning-goal orientations. Hence, there is a need for assessment tools to identify employees’ goal orientations, both to appraise potential employees and to train current ones. If employees are to work effectively, training programs will need to be geared toward helping managers utilize a learning-goal orientation, even managers who are under considerable short-term performance pressures. Moreover, effective managers will be those who use a Type N decision process, an argument that is consistent with Eisenhardt’s (1989) findings that quick decision makers use more information than do slow ones.

REFERENCES

Dunegan, K. J. (1993). Framing, cognitive modes, and image theory: Toward an under-

**APPENDIX**

**Bill’s Career Decision Making: An Illustrative Coding Scheme**

Background: Bill, a personnel manager, is facing a career decision-making crossroads. Bill’s boss has informed him that he needs to upgrade his ability considerably, otherwise his current job will be seriously endangered. Bill ponders about how to deal with the situation.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information attributes</td>
<td>Positive vs. Negative</td>
</tr>
<tr>
<td>Task difficulty</td>
<td>Complex vs. Simple</td>
</tr>
</tbody>
</table>
Problem definition  General vs. Specific
Self-image  Enhanced vs. Maintained vs. Frustrated
Expectancy  Optimist vs. Pessimist
Number of alternatives  Many vs. Few
Advice seeking  Preferred vs. Not Preferred
Perceived urgency  Relaxed vs. Constrained
Expectancy  Optimist vs. Pessimist
Number of alternatives  Many vs. Few
Advice seeking  Preferred vs. Not Preferred
Perceived urgency  Relaxed vs. Constrained
Reasoning patterns  Simultaneous vs. Sequential
Decision focus  Futuristic vs. Status Quo

Note. A typical Type E decision process will be coded as follows: information attributes—positive; task difficulty—simple; problem definition—general; self-image—enhanced (or maintained); expectancy—optimist; number of alternatives—many; advice seeking—preferred; perceived urgency—relaxed; reasoning patterns—simultaneous; and decision focus—futuristic. A typical Type N decision process will be coded as: information attributes—negative; task difficulty—complex; problem definition—specific; self-image—frustrated; expectancy—pessimist; number of alternatives—few; advice seeking—not preferred; perceived urgency—constrained; reasoning patterns—sequential; and decision focus—status quo.

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