1-1978

Some Boundary Considerations in the Application of Motivation Models

Bronston T. Mayes

University of Nebraska - Lincoln

Some Boundary Considerations in the Application of Motivation Models

BRONSTON T. MAYES
University of Nebraska, Lincoln

From the actor's perspective, a behavioral environment can be typified by two continuous dimensions, knowledge of potential outcomes and knowledge of causal relationships among environmental elements. These dimensions determine the situational ambiguity perceived by the actor. Expectancy, equity, operant conditioning, and attitude theories of motivation are considered in such ambiguous environments. Propositions are set forth which allow the researcher to select the most predictive motivation model.

Human motivation can be viewed from two basic positions. First, what is the nature of the force that energizes the individual to act or to behave at all? Second, given some level of activation, which behaviors are emitted? Vroom (31) touches on these issues and decides that the latter question is more important than the former.

A similar conceptualization is apparent in the work of Campbell, Dunnette, Lawler, and Weick (3), who divided the major motivation

Bronston T. Mayes (Ph.D. candidate — University of California, Irvine) is Assistant Professor of Management, College of Business Administration, University of Nebraska, Lincoln.

models into two categories: process models and content models. Content models, which included various conceptualizations of needs in addition to the Herzberg model, seem concerned with what initiates or energizes behavior. Process models including operant conditioning, expectancy, and equity theories predict which behaviors will be emitted when the organism is aroused. Later writers (18) continued this distinction in their review.

Over the past 15 years considerable research has been directed toward understanding human motivation. The focus has been to test the ability of various models to predict human behavior. Content models, with the possible exception of needs theories proposed by Alderfer

(2) and McClelland (17), have not been supported by empirical evidence. But process models have demonstrated moderate and rather consistent predictive power. If the task of the student in organizational behavior (OB) is to predict the behaviors of individuals in organizational settings, the process theories seem to hold greater utility than the content models.

Unfortunately, even the process models fail to explain more than 30 percent of criterion behavior variance in any particular research study. Often these moderate predictions are explained by researchers in terms of poor instrument reliability/validity, quirks of the sample under study, uncontrolled but recognized extraneous variables, or "error variance". Seldom has there been any recognition of the possibility that the models may have been inappropriately applied to a particular behavioral setting. Each model may possess predictive power in some situations but not in others and this notion has gone unrecognized by most researchers.

This article focuses on the relevant theoretical boundaries within which one of the process models might be more appropriate as a predictor of behavior than another model. First, the content of each major model is summarized briefly, and literature cited to guide the interested student. Second, a conceptual scheme is set forth outlining relevant dimensions of behavioral settings. Third, the major process models are related to the various theoretical boundaries within which they are most appropriately used. Finally, some comments are provided concerning implications of this conceptualization for future research.

Behavioral Process Models

Expectancy Theory

Vroom (31) formulated the expectancy model most commonly researched today. The essence of expectancy theory is that behavioral choices are consciously made on the basis of the valence (attractiveness) of outcomes to be derived from a particular act and the expectancy that the given act will lead to the outcomes desired. Conceptually:

Motivation = Expectancy x Valence

A multiplicative relationship is believed to exist between expectancy and valence in that neither alone is sufficient to predict behavior. Two basic assumptions underlie this model. First, hedonism seems to be involved such that individuals are assumed to pursue pleasurable outcomes and to avoid painful outcomes. Second, individuals are presumed to be rational in that they will choose the behavioral alternative that maximizes positively valent outcomes and/or minimizes negatively valent outcomes.

Although criticisms have been directed against the model (5, 10, 12, 19, 20), such things as job choice, valence of performance level, self-rated effort, and job satisfaction are predicted moderately well (19).

Behavior as a Function of Attitude

Fishbein (6) proposed a model that predicts behavior based upon a behavioral intent that is dependent upon attitudes toward a behavioral act and normative beliefs about the behavioral act. This model is represented as follows:

$$B \approx BI = [A] \, W_0 + [(NB)(MC)] \, W_1$$

Where B = Behavior

BI = Intention to make a particular response

A = Attitude toward the act based on the instrumentality of the act for desired outcomes

NB = Normative beliefs that the behavior is what the actor "should" do in the situation

MC = Actor's desire to comply with the norm

W_0, W_1 = Empirically derived weights

As visualized by Fishbein, the attitude term in the above model is analogous to an expectancy formulation in that attitude toward an act is

determined by the multiplicative interaction of outcomes (value realizations) and instrumentalities. Rosenberg (26) provides some support for this approach to the determination of attitudes by showing attitudes to be related to a relatively small set of values, a notion consistent with the later work of Rokeach (25). A major departure from the expectancy formulation is its consideration of social norm compliance as a separately weighted set of outcomes. Expectancy theory lumps social outcomes together with a multitude of unrelated outcomes and may thereby understate the importance of social norms in predicting behavior. Some empirical support for the Fishbein model has been reported (20).

Equity Theory

Adams (1) proposed a theory of motivation that was later modified by Pritchard (24). In a social situation, a person (P) takes account of the inputs (effort, discomfort, opportunity costs, education) and outcomes (rewards, satisfactions) that both P and some referent other person (O) derive from the situation. The comparison is usually presented in the form of a ratio:

$$\frac{\text{Inputs } (P)}{\text{Outcomes } (P)} : \frac{\text{Inputs } (0)}{\text{Outcomes } (0)}$$

If the comparison is seen as equitable by P (that is, P's input/outcome ratio is similar to 0's), no behavior is predicted. But if the comparison is viewed as inequitable (particularly if P sees himself or herself as relatively under-rewarded) the model predicts that P will undertake some action to restore equity.

The underlying assumption is that when an individual perceives inequity, a state of tension/dissonance is experienced that prompts P to take action to restore equilibrium to the system. The major shortcoming of the model is that it fails to predict which elements of the comparison ratio will be adjusted or whether such adjustment will take the form of overt behavior or attitude change. There is even some evidence

(7) that selection of the comparison (O) is done in a manner to reduce feelings of inequity. Pritchard (24) and Goodman and Friedman (8) provide an excellent review of major research findings. The model does seem to predict changes in inputs under conditions of underpayment and, to some degree, under conditions of overpayment. The amount of behavior actually explained by the equity formulation is unknown; but it is felt that one major use for equity theory is in the prediction of reward satisfaction.

Operant Conditioning

Unlike the other process models, operant conditioning denies the importance of any psychological state and instead shifts the locus of behavioral causality to the environment in which the behavior takes place. As proposed by Skinner (27) and others (14, 21), the operant model predicts behavior on the basis of rewards and punishments experienced by an organism when its behavior acts on its environment. Quite simply, behavior that is rewarded tends to be repeated while behavior that is unrewarded or punished tends to be extinguished. Since rewards and punishments are defined in terms of the behavior produced, no cognitive or affective individual responses are considered. Research on the model as it relates to humans has been centered on the effectiveness of reward/punishment schedules in shaping various kinds of behavior such as work output (32), verbal responses (28), and absenteeism (22). Some better known applications of the theory are in education where programmed learning techniques have been widely accepted. From the available evidence operant techniques can be concluded to be highly effective in conditioning new behavioral responses in both humans and animals.

The Behavioral Environment

Human behavior takes place in some physical setting or environment. A multitude of such environments exist, with each possessing its

own unique set of content features. Such features include other persons, a variety of objects and, from the point of view of the actor, sequential relationships among these features. For conceptual ease, these sequential relationships can be referred to as causal relationships, in the sense that if one environmental feature changes in some aspect, it is possible to assess whether or not other features change in response to the first. If these sequential relationships are consistent over a number of observations, causality may be inferred. Typical settings in which an actor may emit behavior are the work place, home, beach, woods, church, school, etc. Each is different with respect to the persons and objects present. Similarly, causal relationships among persons and objects may vary from one setting to another.

The behaviorally relevant elements in any environment are those perceived by the individual actor (15). These perceptions may or may not be consistent from one individual to the next. That is, individuals placed in identical environments may not perceive the same elements or even the same relationships among elements.

In a particular environment an actor may find that his or her presence or behaviors tend to produce changes in elements of the environment. These changes can be viewed as outcomes of behavior and, when perceived, may be evaluated as desirable or undesirable. This approach to defining an environment from the perspective of the actor's impact on it is consistent with operant theory in which a subject "operates" on the setting producing rewarding or aversive changes. In the context of this article, cognitive and affective aspects are introduced in that the actor is aware of his or her initiation of the change and evaluates the change as desirable or undesirable. The actor need not be aware of the causal relationships among environmental elements to derive outcomes from activity in the environment. In an organizational setting, typical outcomes are behaviors of others in reaction to the actor, production of work output, attainment

Degree of Knowledge About Potential Outcomes		
Degree of knowledge about causal relationships	Outcomes well known	Outcomes unknown
Causal relationships well known	I	II
Causal relationships unknown	III	IV

FIGURE 1. Perceived Behavioral Environment.

of rewards by the actor and by others, and attitudes of job satisfaction or dissatisfaction.

Two important issues must be recognized. Only those features of the environment perceived by the actor are relevant in predicting behavior. Additionally, the actor brings into the situation a set of behavioral norms he or she has learned to accept both through cultural conditioning and through relationships with reference groups.

From the perspective of the actor a behavioral setting can be typified by two continuous dimensions adapted from Thompson and Tuden (30): (a) knowledge of potential outcomes in the environment, and (b) knowledge of causal relationships among elements in the environment. By dichotomizing these dimensions, a behavioral setting is conceptually mapped (see Figure 1).

Combining these two dimensions into four quadrants allows the typing of behavioral environments in terms of situational ambiguity. Quadrant II seems to present an impossible set of conditions — a situation in which an individual is highly knowledgeable about causal relationships among environmental elements, but completely unaware of the outcomes obtained from such

causal interactions. If event A is causally related to event B such that occurrence of A precedes the occurence of B, then B may be viewed as an outcome of A. Thus, knowledge of causal relationships implies some knowledge of outcomes. It would be impossible to be knowledgeable of causes while simultaneously ignorant of outcomes. Quadrant II will therefore be excluded from further consideration.

Quadrants I, III, and IV represent varying degrees of ambiguity with I being least ambiguous and IV being most ambiguous. It is proposed that the appropriate behavioral model to apply in a given behavioral environment is contingent upon the degree of ambiguity within the environment as perceived by the actor. Newly entered environments would tend to fall into Quadrants III or IV. As the actor produces behavior in the new setting and becomes aware of outcomes and causal relationships, the perceived environment will gradually evolve toward Quadrant I characteristics.

Motivation in the Behavioral Environment

Unambiguous Situations

Quadrant I seems to present conditions under which application of the expectancy model is most appropriate (12). A rational person would have adequate information with respect to outcomes and expectancies to make behavioral decisions. But the expectancy model seems to provide more accurate predictions when the number of outcomes is limited; the greater the number of outcomes that must be considered, the less the predictive power of the model (19). Gregory (9) likewise proposed a limit to the number of information bits the human mind can simultaneously consider.

P1:   *In unambiguous situations with limited outcomes the expectancy model is highly predictive of behavior.*

Once his or her conceptual limit has been reached, a rational individual could be expected

to group outcomes into classes which could then be related to specific behavioral objectives or goals. This is in keeping with Locke's (16) position that behavior is goal directed and that the expectancy model is best used to predict the selection of goals rather than the actual behavior observed.

P2:   *In unambiguous situations with many possible outcomes, the expectancy model is highly predictive of goal choices, which, in turn, are used to guide behavior.*

One issue that has received little recent attention in the motivation literature is habitual behavior. Hull (13) considered habit strength a behavioral predictor but no recent work is to be found. It seems unreasonable to posit that individuals calculate the outcome potential of each minute behavior. This is particularly the case in Quadrant I environments characterized by high stability.

P3:   *In unambiguous behavioral environments where there is high stability in both outcomes and causal relations, a significant amount of behavior can be attributed to habit patterns.*

Ambiguous Situations

Quadrants III and IV are characterized by varying degrees of ambiguity, with Quadrant III being less ambiguous than Quadrant IV. A Quadrant III setting would be encountered when an individual transfers membership from one organization to another similar organization. In this circumstance outcomes such as system and performance rewards might be nearly identical across organizations but administrative systems and characteristics of interpersonal relationships might vary widely. Thus, the individual would have some knowledge relating to outcomes but relatively little knowledge about causal relationships within the new organization.

A Quadrant IV environment is highly ambiguous both with respect to outcome knowledge and causal knowledge. Such a situation would

be encountered in new social settings such as one's first attendance at a professional meeting, attending a cocktail party where few persons are known, or during major career changes. Another excellent example would be the initial hiring organization of a student just completing a liberal arts curriculum.

Since system referents are scarce in ambiguous situations, behavior is expected to be predicated, at least initially, on internalized standards or norms. Thus, an individual's behavior would be best predicted by the key values or norms he or she brings to the situation. The Fishbein model should be highly predictive in this circumstance.

P4:   *In highly ambiguous environments initial behavior is best predicted by internalized values and norms.*

As time is spent in an ambiguous environment, the actor will engage in behavioral exchanges with other system elements. If these exchanges are viewed as rewarding, they will be repeated and if viewed as aversive, they will be discontinued. This is precisely the behavior predicted by the operant learning model. Initially, behavior might be rather aimless, although consistent with values, but as reinforcement contingencies become known to the actor more calculative behavior could be expected. This contingency awareness effect has been noted in a review of some of the verbal conditioning literature (28). The effect of contingency awareness is to change the nature of the perceived environment as outcome and causal knowledge become more complete. As such perceptions change, the operant model will become less effective in predicting behavior and the expectancy model will increase in predictive power.

P5:   *While learning about a new environment, an individual's behavior is best predicted by operant reinforcement schedules. Once reinforcement contingencies are known by the individual, the expectancy model gains in relative power to predict behavior.*

In addition to operant theory, the exchange perspective introduced above is useful in explaining trial and error behavior in new settings (29). One characteristic of an exchange process is evaluation of outcomes by the actor in terms of some comparison level (29). In such evaluations, Equity Theory would come into play particularly in ambiguous situations (4). If outcomes are evaluated at or above the actor's comparison level, the exchange would be seen as satisfying but if outcomes fall below the comparison level, the exchange would be dissatisfying. An actor would not be expected to know other persons in a new situation and would, of necessity, rely on some internalized comparison standard. This internal standard should be related to one's aspiration level.

P6:   *In newly entered environments outcome satisfaction can be predicted by equity formulations in which the comparison "other" is an internal standard analogous to aspiration level.*

Over time an individual would become acquainted with other persons in his or her environment. These other persons constitute potential referents for equity comparisons. Whether or not these persons will actually be used as referents may depend on the actor's possessing an equity norm. Such a norm might be culture specific in that some cultures are characterized by great inequities in the distribution of wealth (feudal systems) while other cultures stress equitable treatment of individuals. If one's culture did not include an equity norm, experienced inequity should have no particular impact on the person. Under this circumstance there would be little reason to compare one's own inputs and outcomes with another's.

P7:   *An individual will select another person as a referent rather than an internal comparison standard only if the individual's culture possesses an equity norm.*

Some support for this proposition is found in an interesting experiment in which students

were hired into a realistic work situation (11). A given wage was advertised but the subjects were offered wage rates above or below the advertised standard. Those who came to work at below standard wages probably based their decision on an internal comparison level. But when workers were gathered in the work setting and it was discovered that different salaries were being paid to individuals doing equivalent work, a near riot ensued. The experiment was discontinued because of attention given the situation by the university newspaper. If student groups in the United States can be assumed to cherish equity norms, it is reasonable to infer that initial behavior in the job situation was based on some internal standard, but the comparison standard shifted to others as a result of an equity norm.

Changes in the Nature of the Bheavioral Environment

The behavioral environment has been defined in terms of its ambiguity as perceived by an individual acting in it. Over time, individuals should become increasingly aware of outcomes and causal relationships within their environments. This knowledge is expected to reduce the ambiguity perceived in the environment.

P8:   *Perceived situational ambiguity will show an inverse relationship to the amount of time an individual spends in a behavioral environment.*

Research Implications

Until now little attention has been given to the situations under which one motivation model would be more appropriate than another. Clearly each model discussed above could explain a certain amount of behavior in any situation. The major research task is determination of the critical values of boundary dimensions that would lead to preference of one model over the others. For example, what degree of situational ambiguity is acceptable before abandoning the expectancy model in favor of the operant learning model? Is there a further level of ambiguity that would necessitate viewing behavior in terms of value or attitude realization? If situational ambiguity is a function of the time spent by an actor in an environment, it seems apparent that individual differences of actors would influence the amount of time required for progression from Quadrant IV to Quadrant I. What are these relevant differences?

The role of cultural norms should be investigated in the organizational setting. It seems important to identify taboos; regardless of the incentive level associated with an act, it will not be affected if the actor perceives the possibility of a taboo violation. A more immediate but related issue is the role of equity in motivation. If equity has relevance only as a norm, it would be useful to control for its effect in studies of incentives. Similarly, in the presence of an equity norm, an isolated worker might not experience reward dissatisfaction even if relatively underpaid. Perhaps equity should not be viewed as a process model after all. Rather, it could contribute to prediction of satisfaction (23) or might more appropriately be considered a content model. That is, feelings of inequity could initiate behavior but the actual behavior selected would be explained in terms of a situationally moderated expectancy formulation.

In light of research to date, there appears to be sufficient knowledge regarding the effectiveness of currently available motivation models in predicting behavior to caution against their indiscriminate use in all situations. Those attempting to make predictions based on these models must judiciously consider the nature of the behavioral environment before selecting any particular model.

REFERENCES

1. Adams, J. S. "Toward an Understanding of Inequity," *Journal of Abnormal Psychology*, Vol. 67 (1963), 422-436.

2. Alderfer, C. P. "An Empirical Test of a New Theory of Human Needs," *Organizational Behavior and Human Performance*, Vol. 4 (1969), 142-175.

3. Campbell, J. P., M. D. Dunnette, E. E. Lawler, and K. E. Weick. *Managerial Behavior, Performance, and Effectiveness* (New York: McGraw-Hill, 1970).

4. Dansereau, F., J. Cashman, and G. Graen. "Instrumentality Theory and Equity Theory as Complementary Approaches in Predicting the Relationship of Leadership and Turnover Among Managers," *Organizational Behavior and Human Performance*, Vol. 10 (1973), 184-200.

5. DeLeo P. J., and R. D. Pritchard. "An Examination of Some Methodological Problems in Testing Expectancy Valence Models with Survey Techniques," *Organizational Behavior and Human Performance*, Vol. 12 (1974), 143-148.

6. Fishbein, M. "Attitude and the Prediction of Behavior," in M. Fishbein (Ed.), *Readings in Attitude Theory and Measurement* (New York: Wiley, 1967).

7. Goodman, P. S. "An Examination of Referents Used in the Evaluation of Pay," *Organizational Behavior and Human Performance*, Vol. 12 (1974), 170-195.

8. Goodman, P. S., and A. Friedman. "An Examination of Adams' Theory of Inequity," *Administrative Science Quarterly*, Vol. 16 (1971), 271-288.

9. Gregory, C. E. *The Management of Intelligence* (New York: McGraw-Hill, 1967).

10. Heneman, H. G., III, and D. P. Schwab. "Evaluation of Research on Expectancy Theory Predictions of Employee Performance," *Psychological Bulletin*, Vol. 78 (1972), 1-9.

11. Hinton, B. L. "The Experimental Extension of Equity Theory to Interpersonal and Group Interaction Situations," *Organizational Behavior and Human Performance*, Vol. 8 (1972), 434-449.

12. House, R. J., H. J. Shapiro, and M. A. Wahba. "Expectancy Theory as a Predictor of Work Behavior and Attitude: A Reevaluation of Empirical Evidence," *Decision Sciences*, Vol. 5 (1974), 55-77.

13. Hull, C. L. *A Behavior System* (New Haven, Conn.: Yale University Press, 1952).

14. Jablonsky, S. F., and D. L. DeVries. "Operant Conditioning Principles Extrapolated to the Theory of Management," *Organizational Behavior and Human Performance*, Vol. 7 (1972), 340-358.

15. Lawler, E. E. *Motivation in Work Organizations* (Monterey, Calif.: Wadsworth, 1973).

16. Locke, E. A. "Personnel Attitudes and Motivation," *Annual Review of Psychology*, Vol. 26 (1975), 457-480.

17. McClelland, D. C. *The Achieving Society* (Princeton, N.J.: Van Nostrand Reinhold, 1961).

18. Miner, J. B., and H. P. Dachler. "Personnel Attitudes and Motivation," *Annual Review of Psychology* (1973), 379-402.

19. Mitchell, T. R. "Expectancy Models of Job Satisfaction, Occupational Preference, and Effort: A Theoretical, Methodological, and Empirical Appraisal," *Psychological Bulletin*, Vol. 81 (1974), 1053-1077.

20. Mitchell, T. R., and A. Biglan. "Instrumentality Theories: Current Uses in Psychology," *Psychological Bulletin*, Vol. 76 (1971), 432-454.

21. Nord, W. R. "Beyond the Teaching Machine: The Neglected Area of Operant Conditioning in the Theory and Practice of Management," *Organizational Behavior and Human Performance*, Vol. 4 (1969), 375-401.

22. Pedalino, E., and V. U. Gamboa. "Behavior Modification and Absenteeism: Intervention in One Industrial Setting," *Journal of Applied Psychology*, Vol. 59 (1974), 694-698.

23. Porter, L. W., and E. E. Lawler. *Managerial Attitudes and Performance* (Homewood, Ill.: Dorsey Press, 1968).

24. Pritchard, R. D. "Equity Theory: Review and Critique," *Organizational Behavior and Human Performance*, Vol. 4 (1969), 176-211.

25. Rokeach, M. *Beliefs, Attitudes, and Values* (San Francisco, Calif.: Jossey-Bass, 1968).

26. Rosenberg, M. J. "Cognitive Structure and Attitudinal Affect," *Journal of Abnormal and Social Psychology*, Vol. 53 (1956), 367-372.

27. Skinner, B. F. *Science and Human Behavior* (New York: Macmillan, 1953).

28. Spielberger, C. D., and D. L. DeNike. "Descriptive Behaviorism Versus Cognitive Theory in Verbal Operant Conditioning," *Psychological Review*, Vol. 73 (1966), 306-325.

29. Thibaut, J. W., and H. H. Kelley. *The Social Psychology of Groups* (New York: Wiley, 1959).

30. Thompson, J. D., and A. Tuden. *Comparative Studies in Administration* (Pittsburgh, Penn.: University of Pittsburgh Press, 1959).

31. Vroom, V. H. *Work and Motivation* (New York: John Wiley & Sons, 1964).

32. Yukl, G. A., and G. P. Latham. "Consequences of Reinforcement Schedules and Incentive Magnitudes for Employee Performance: Problems Encountered in an Industrial Setting," *Journal of Applied Psychology*, Vol. 60 (1975), 294-298.