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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report presents the theoretical foundation for a new set of propositions regarding human motivation called Adaptive Motivation Theory. The major proposition of the theory is that individuals undergo cognitive change as a result of environmental interaction. This cognitive change has implications for motivated behavior. In addition to a statement of the theory, activities for the past year and the next year are discussed.		

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ADAPTIVE MOTIVATION THEORY

ANNUAL REPORT: February, 1982

FRANK J. LANDY

Principal Investigator

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Introduction

This report will address several issues. Since it is an annual report, I will describe the activities carried out in the preceding 12 months. In addition, I will present the preliminary statement of Adaptive Motivation Theory. Next, I will indicate in broad terms what needs to be done in the next two years. Finally, I will describe the activities planned for the next 12 month period.

ADAPTIVE MOTIVATION THEORY

Some Background

Motivation Theory is in bad shape. It has been decades since any major breakthrough has occurred in the understanding and prediction of the forces which influence the initiation, direction, and termination of behavior. To be sure, there have been modest suggestions that certain variables may be important. Korman (1970) suggested that self-esteem and self-consistency were valuable in looking for regularity in behavior. Alderfer (1972) refined both the process and the substance of Maslow's need hierarchy. Hackman and Oldham (1976) have proposed an operational definition for enriched and deprived work environments. But none of these contributions has been of the magnitude of Vroom's proposition regarding valence or expectancy, or Maslow's prepotent need system, or Berlyne's notions of arousal. It might be reasonable to propose that no significant advances have been made in human motivation theory in almost 20 years. From these references, it can be seen that most of the

activity which is underway is being carried out in the context of work motivation. As a matter of fact, most current research in motivation theory is prescriptive in nature. Researchers are attempting to find out how to get person A to carry out act B. In order to be of any enduring value, a theory of human motivation must be able to transcend the phenotypic characteristics of the setting in which it is studied. To be sure, setting (or environment) is likely to be represented in one or more parameters of a reasonable theory of motivation, but a theory which is not robust enough to generalize across settings merely suggests that we have not identified all of the important components to be considered. I would hope that Adaptive Motivation Theory will be developed at a level which will permit application in a wide variety of settings, including but not limited to work environments.

Nowhere are the deficiencies of current motivation theories more obvious than in the empirical tests of those theories. I have described some of these failures elsewhere (Landy and Trumbo, 1980). Suffice it to say that no single theory has received sufficient logical or empirical support to warrant its adoption as a standard for understanding motivated behavior. The prototypic test of a theory results in correlations of approximately .30 between predicted and observed behavior. Replications of even these modest values are few and far between. One must conclude from an examination of these attempts that motivated behavior is still a mystery.

The failure of various motivation theories to accumulate compelling empirical support may be the result of one or more of the following factors:

1. The measuring instruments commonly employed as operational definitions of the critical elements of the theory may be deficient.
2. In tests of the theory, no attempt has been made to limit the domain of behavior to be predicted.
3. Not all of the critical elements of a particular theory have been identified.

The most unlikely reason for the deficiencies of current motivational theories is #1. There is sufficient appreciation for the importance of the integrity of operational definitions to assure that over the years, instrument development has been handled reasonably well. The problems with motivation theories are more likely to stem from #2 or #3. With respect to the domain of motivated behavior, there is seldom any consideration of types of behavior which need not be examined from the motivational perspective. There are two primary classes of such behavior - reflexive and habitual. There is little argument about reflexive behavior. It is somewhat pointless to consider the foundations of physiologically determined automatic behavior. Thus, one would be surprised to see a motivation theory attempt to explain the knee jerk, flexion, or sneezing reflex. There is less agreement about the necessity of determining the motivational roots of habitual behavior. In this case, we are dealing with behavior that was at some earlier point under voluntary control. Nevertheless, it has become an "overlearned" response. In other words, it is as automatic as if it were a reflex. This type of behavior may defy "motivational analysis".

Other approaches to motivation theory have suggested that important variables have been ignored. Adaptive Motivation Theory is no exception. I propose that certain cognitive variables are important in the motivational process. To be sure, others have also suggested the importance of cognitive variables. They suggest that parametric values may change. None propose that the motivational process itself changes. This difference accounts for the choice of the title "Adaptive Motivation Theory". It is meant to imply that there is cognitive adaptation which occurs on the part of the individual. This adaptation is a result of an interaction between individual difference variables (such as reasoning and self-esteem) and environmental variables (such as the complexity of environmental information).

Adaptive Motivation Theory has been developed from a deductive-hypothetico perspective rather than the more traditional inductive framework. In practical terms, this means that it is based on the principles suggested by others as universals. At the outset, the theory attempts to link these principles logically rather than empirically. In the course of stating these principles, certain corollaries suggest themselves. These corollaries can be examined empirically. In the following sections, a series of general principles will be stated. Some of these will be stated rather simply with little detail at this point. This is because a good deal of work must be done in the next year providing that detail from existing theory and data. Other principles will be accompanied with a good deal of detail.

After a statement of the principles, a skeletal statement of the theory will be presented. This will be followed by a section outlining

the corollaries which will be examined empirically during the period of investigation.

Substantive Principles Guiding the Theory Development

1. Cognitive activity plays a major role in motivated behavior

Most recent conceptualizations of motivation have relied heavily on the capacity of the organism to remember, evaluate, and act on information received from the environment. The best example of this principle can be found in Expectancy Theory (Vroom, 1964; Porter and Lawler, 1968) which suggests that individuals evaluate valences, instrumentalities, and a wide variety of expectancies. Other variations of cognitive aspects of motivated behavior can be found in Equity Theory (Jaques, 1961; Adams, 1965), theories of intentional behavior (Ryan, 1948; 1970) and theories of self-esteem and self concept (Korman, 1970).

Similar cognitive influences can be found in broader considerations of the diversity of human behavior. White (1959) suggested that individuals seek out settings which would allow them to use important skills and abilities in an attempt to demonstrate mastery of their environments. Kelly (1955) suggested that man is a scientist, seeking information which will fill in the holes in his understanding of his environment. This was not a teleological principle as far as Kelly was concerned - simply a description of the nature of man. Thus, Kelly had no use for the concept of motivation at all. Nuttin (1973) placed

certain hedonistic overtones on White's principle of effectance motivation by suggesting an emotion labeled "causality pleasure".

Each of these theorists has suggested that man is a constructive organism who takes information, does things with this information which make it more useful, and then acts upon the construction (or reconstruction) of reality. This position is in sharp contrast to that taken by the doctrinaire behaviorists and need theorists. Perhaps surprisingly, many of the principles of the Psychoanalytic, neo-Freudian, and Ego psychology movements might find a home in the newer cognitive camps. This is particularly true if we ignore discussions concerning the source of energy for motivated behavior. It is this latter discussion which often causes the greatest difficulties in compromise. In spite of the cognitive overtones of much of the work described above, cognition is treated most often in the context of stable individual differences (either needs or behavioral capacities) rather than as a process with certain regular parameters built in to account for changes in this cognitive activity.

2. Reasoning is a major component of cognitive activity

Recent empirical and theoretical work by Sternberg (1977; 1978; 1980; 1982) has strongly suggested that reasoning is a central component of intelligence. Reasoning can be of several forms. The two most common distinctions are deductive and inductive. Deductive reasoning involves moving from universal principles to specific instances of those principles (i.e. from general to specific). There is nothing

probabilistic about deduction. We reason from certain indisputable "givens". Inductive reasoning involves deriving general (though probabilistic) principles from a series of specific instances (i.e. from the specific to the general). Inductive reasoning can be broken down still further into rule derivative induction and event predictive induction (Colberg, Nester, and Cormier, 1982). In the former case, individuals are attempting to induce principles from instances in a common domain and in the latter case, they are attempting to apply probabilistic principles to new instances. These applications may either be attempts to determine the membership of a new instance (i.e. is it a member of the domain under consideration or not), or to validate the principle which was derived from earlier instances.

Instances of pure deduction are uncommon in human behavior. In most situations, we are considering either rule derivative or event predictive induction. Nevertheless, it is possible to study what have come to be known as deductive processes by providing individuals with "universals" and examining their use and misuse of those principles.

3. There are both individual and group differences in reasoning ability.

A recent review of the reasoning literature by Sternberg (1982) amply documents the fact that there are reliable differences among individuals and between subsets of individuals in reasoning ability. This is no surprise to developmental psychologists. This is a major tenet of the Piagetian thrust in developmental cognition. These differences are thought to be the result of the interaction of

environmental demand and maturation. Genetic pre-disposition is thought to set a general range for cognitive activity.

4. There are different types of learning and memory

Experimental psychologists have used the classical/instrumental learning distinction for decades in an attempt to guide theory and research in animal and human learning. More recently, the orthodox behaviorists have added the category of "operant" to this list. These categories have been more valuable in considering performance than learning. Other taxonomies have been suggested for examining the task demands placed on the organism in a learning situation. Gagne's (1965) learning hierarchy is an example of such a taxonomy. Others would include those of Tolman (1949), Wickens (1964), Oxendine (1968), and most recently Ryan (1982). As a group, these taxonomies suggest that there are qualitatively different things to be learned (e.g. names, faces, motor responses, rules) and that these things may require different capabilities and/or different learning strategies. As an example, linguistic memory is thought to be different from episodic memory. Ryan (1982) suggests that linguistic memory depends on a process called memorization (which often involves intentional rehearsal) while episodic memory may be non-intentional and involve a process more accurately described as recollection. Similarly, distinctions are made between recollection and recognition. Ryan makes a suggestion which will prove important in the discussion of Adaptive Motivation Theory below: he suggests that two subdivisions of learning involve learning about

social groupings and organizations and learning about one's self (self concept).

5. Individuals pass through stages or sequences in cognitive development

The work of Piaget is well known and documents in great detail one way of describing the developmental sequence of cognitive activity. Similar developmental stage systems can be seen in the study of moral development by Kohlberg (1969), personality development by the Psychoanalytic school, and psycho-social development by Erikson (1968).

The simple statement of this developmental principle is hardly earth-shaking. Nevertheless, motivation theorists seem to have been blissfully ignorant of parameters of cognitive development in their attempts to frame theory. Theories such as Expectancy (Vroom, 1964) and Equity (Adams, 1965) do not consider the issue of cognitive change. The few theories which do concentrate on change in motivated behavior (e.g. Maslow, 1943; Alderfer, 1972) ignore the role of cognitive parameters in this change.

Parenthetically, the deficiencies of motivation theories become particularly apparent in dealing with the issue of boredom. In terms of objective reality, it would seem clear that the stimulus has not changed. In terms of subjective reality, however, something rather substantial has occurred. Most theories would prefer to ignore this phenomenon. It is also popular to "explain" through labeling or the use

of tautologies , i.e."... after a period of time, the organism becomes habituated or desensitized to the stimulus...". Since it is uncommon to hear of individuals who become less bored with exposure to a constant stimulus set, we might justifiably conclude that there is a regular sequence which characterizes the appearance of boredom (Landy, 1978). We move from a state of interest toward a state of boredom. Thus, we are confronted daily with situations which suggest systematic cognitive change in the interactions of individuals and environments.

The work of cognitive theorists along with observations of the "human condition" suggest that a motivation theory should explicitly include a component which allows for cognitive change on the part of the organism. By this I mean to imply a change in basic operations - in parameters - not simply in the marginal values of these parameters.

6. Environmental demand affects cognitive development

It was once popular in developmental psychology to look for "critical periods" in cognitive development. It was suggested that early cognitive deprivation had superadditive effects on later cognitive capacities. Similar mechanisms were suggested by the Freudians in describing psycho-sexual development. This is an extreme variation on the environmental theme. A more conservative position would be that taken by the Piagetians. They describe Equilibration as the resultant of the inevitable interaction of organismic capacities and limitations, on the one hand, and environmental demands, on the other. They propose that our cognitive girders, our schemata, develop in direct relation to the

need imposed for such structures by the environment. Simple environments require rather spare and simple cognitive frames. Complex and demanding environments require rather well developed and intricate frameworks. If maturation is held constant, it is the environment which will account for differences in cognitive development. While the Piagetians concentrate on early, middle, and late childhood, I will suggest that the mechanism by which environmental demands are transformed into cognitive structures is not substantially different for adults who have reached some maturational peak.

Summary of Principles

Below, I have listed again the principles which have guided the early work in the construction of Adaptive Motivation Theory.

1. Cognitive activity plays a major role in motivated behavior
2. Reasoning is a major component of cognitive activity
3. Reasoning plays a role in motivated behavior
4. There are both individual and group differences in reasoning ability.
5. Individuals pass through stages or sequences in cognitive development
6. Environmental demand affects cognitive development
7. Motivation theories are statements of rules by which individuals choose among alternative courses of action
8. The rules by which individuals choose among alternative courses of action systematically change (adapt) as a function of changes in cognitive structure

Since I have already confessed to a deductive plan of attack, it is important to be familiar with the source of my "universals". What should be apparent from an examination of these six principles is my belief that the constructs of motivation and learning are inextricably bound. I might go so far as to suggest that a motivated action is an epistemological event. It is an attempt on the part of an individual to come to a greater understanding of the physical and psychological environment. In the process of attempting to understand this environment, the individual will be heavily engaged in activities we have chosen to define as reasoning activities, both inductive and deductive. The efficiency with which that understanding can be accomplished, and the strategies which are used to develop that understanding will depend heavily upon the cognitive capacities and limitations of the individual. These capacities and limitations, in turn, will be responsive to environmental demand.

Structural Description of Adaptive Motivation Theory

Figure 1 presents a hierarchy of learning sequences. This

Insert Figure 1 about here

hierarchy suggests that individuals move from the molecular to the molar, from the concrete to the abstract and from egocentric learning to

social learning. It assumes that an organism seeks information about the environment and gathers this information in a systematically changing manner. The object of gathering this information is to eventually "experiment" on the environment. The term "experiment" is used in its broadest sense. It would encompass Kelly's (1955) Scientific man, White's (1959) competence striving man, and Nuttin's (1973) man in search of "causal pleasure". The teleology is less important than the dynamic character of the activity.

From Figure 1 we can see that the first level of learning activity is the simple collection of associations. These associations may be S-S, R-R, or S-R. The associations are contextually bound in some broad sense so that we might think of "work" associations, "family" associations, "leisure" associations, etc. The number of contexts represents a meta-level to the theory and the associations between contexts becomes important at some point. This will be discussed in a later section dealing with learning in novel contexts.

These associations are noted and stored until a time when the number and/or complexity of single associations has reached some marginal point. It is at this point that synthesis and abstraction occur. The individual groups associations and derives general principles or grouping rules. This might be thought of as inductive reasoning, problem solving, or concept formation, to mention but a few appropriate construct labels. It is at this point that the individual begins to deal with abstractions of stimuli rather than the stimuli themselves. In a

sense, these are the first stirrings of the constructive aspects of cognition.

The next step is formation of interrelated abstractions which represent the parameters of the world-to-be-learned. For the sake of convenience, these abstractions will be called concepts. Their interrelations might be thought of as analogous to the schemata of the Piagetians. These concepts are continually increased and modified until the information presented exceeds the capacity of the cognitive category (or concept) of the individual. The process of adding and modifying is similar to the accommodation/assimilation balance of Piagetian theory. These concepts are important because they represent, as a group, the parameters with which the organism will "measure" the environment. Thus, simple environments will require only the most primitive of measuring instruments.

Once the concepts have been adequately developed and stabilized, the individual has the luxury of observing others as they attempt to master the environment. Thus, social learning takes place only after the individual has developed abstractions (concepts) to help in the interpretation of events in the environment. It is at that point that the individual can benefit from examining in some detail the failures and successes of others in the environment. This might be thought of as social trial and error learning.

As a result of observing the behavior of others, at some point the individual ultimately takes the final step in attempting to affect the

environment directly through action. It is this final step which represents the most culmination of the learning sequence. This is the hypothesis testing stage. If the action is "successful" the rule which governed it increases in credibility; if, on the other hand, the action results in failure, the individual must modify the rule through a redefinition of the concepts (grouping rules), additional examinations of the actions of others (additional sampling), or restructuring of the combinatorial rule itself.

There are certain characteristics of individuals and environments which will affect the speed and the efficiency with which each level of learning is reached. The major parameter of the environment is complexity. All other things being equal, complex environments will be associated with quicker and more detailed concept formation. The individual characteristics appear in Figure 2 as mediating elements

Insert Figure 2 about here

between various levels of learning. These individual characteristics are reasoning ability (both inductive and deductive), social perception, and self-esteem.

Reasoning ability is the pre-condition for both concept formation (rule-derivative induction) and attempts to predict efficacy in environmental interaction (event-predictive induction) both vicariously and directly.

Social perception is necessary in order to use the newly developed rules as hypotheses in predicting the relative success of the attempts by others to affect the environment.

Finally, self-esteem implies a confidence in the rules which have been developed that allows for a direct test of those rules. It represents the pre-condition for the grand experiment.

Each of these individual difference variables represents a potential obstacle to competent interaction with the environment. In fact, Ryan (1982) has suggested that these three variables represent learning tasks similar to those broader ones described above. Ryan suggests that one must actively learn to understand patterns of relationships (concepts), social stimuli (social perception) and concepts of self (self esteem).

Figure 3 is a restatement of Figure 2 using terms which have been

Insert Figure 3 about here

suggested by Ryan as distinct types of learning. Ryan's learning classes were not ordered in any particular manner. I have arranged them

hierarchically to correspond to the preliminary structure of the proposed theory of motivation.

Some of the implications of this formulation for understanding motivated behavior are obvious and others are more obscure. It should be obvious that the capacity to reason will have a major impact on the nature of the interaction between the individual and the environment. Those who reason well are more likely to actively experiment on their environments. Those who reason poorly are more likely to adopt a reactive mode in environmental interactions. What may not be so obvious is the effect of the environment itself. Reasoning ability will have little importance in relatively simple environments. Collections of S-S, R-R, and S-R associations will be sufficient for effective interaction. Few abstractions, either in the form of rules or in the form of concepts will be required of the individual.

Similarly, while it should be obvious that memory is an important cognitive process in the motivational sequence, the importance of the distinction between episodic and linguistic memory is not so obvious. It may very well be that episodic memory (or recollection) is sufficient for rule generation and application. Nevertheless, the capacity to transform that episode or event into words or abstractions may be a distinct advantage in learning about the environment. This transformation may permit the manipulation of these abstractions, and thus greatly enhance the probability of deductive operations.

Current Motivation Theories

Figure 4 presents categories of current motivation theories hierarchically arranged. They have been ordered in a manner which

Insert Figure 4 about here

conforms with the framework suggested above. This implies that reinforcement theory consists of collections of associations, Need theory consists of interrelated concepts, social learning theory consists of rule application in the social context, and expectancy theory consists of calculated actions by the individual.

While this hierarchy may be logically consistent with the epistemological sequence described above, other orderings are possible. Regardless of which ordering is used several things are apparent from the perspective presented above. It should be obvious that most studies which attempt to support one or another theory of human motivation are doomed from the beginning by their design. The subjects are usually randomly selected from a population which is homogeneous with respect to some demographic (age, sex, experience) or situational (nurses, teachers, engineers) variable. Unfortunately, the subjects are likely to be heterogeneous with respect to a much more important variable - level of learning capacity as suggested in Figure 3. Thus, in a sample of 100 people a portion are likely to be functioning at some associationist level, a second group at the conceptual associationist level, a third

group at the social learning level, and a final group at the intentional level.

Given this possibility, it is not at all surprising that no one theory has received overwhelming empirical support. The only theoretical approach which is appropriate is one which recognizes changes in the rules by which people make motivational decisions. At various levels in the learning hierarchy, individuals depend on different information sources when deciding among alternative courses of action. At the associationist level, individuals rely on recollections of specific S-R, R-R, and S-S pairings. More recent pairings are likely to have a greater impact than less recent ones. For these individuals, the behaviorist propositions regarding contingency schedules will be of benefit in understanding why one course of action was chosen rather than another.

At the conceptual associationist level, specific recollection of events will be less important than the formation of categories or concepts to represent the class of similar events. Reward contingencies are still important in making choices among alternative courses of action but rewards will be much more broadly defined as classes of stimuli rather than specific stimuli.

At the social learning level, models in the relevant setting will have a major impact on the choices which individuals make. There will be an emphasis on gathering information related to the efforts and the rewards of others and deriving decision rules from that information. The concept of "fairness" or equity will be important only in so far as it

is symptomatic of the accuracy of the rule which has been derived. Instances in which the rule does not work are likely to be labeled as inequitable.

At the intentional level, the individual will place great emphasis on the collection and combination of information regarding rewards and punishments, constraints on effort expenditure, probability of effort leading to effective performance, and the probability of effective performance leading to reward. The transitivity of rewards is important at this level as well as the interchangeability of members of a common class of rewards. This means that reasoning capacities will play a major role in motivated behavior.

This brief consideration of motivational levels from the learning perspective suggests that different types of learning and memory are called for at different levels. I have suggested this possibility earlier. We can now examine this proposition in greater detail. We will use the hierarchy proposed by Ryan (1982) and presented above in

Insert Figure 5 about here

Figure 2. In the left hand column of Figure 5, you will see the generic label for various groups of motivation theories (see Landy and Trumbo, 1980 for a description of these categories). In the center column you will find the labels which imply levels of learning and performance which we have discussed above as well as the mediating

pre-conditions which allow for movement up the hierarchy. In the right hand column, you will find a listing of the types of learning and memory involved at each of the levels. The research hypotheses to be presented below emerge from this broad conception of learning strategies, individual differences, and situational constraints. These hypotheses are general and describe a series of logical propositions which are used to guide the research effort rather than a series of specific corollaries to be empirically supported or rejected. After presenting the research hypotheses, a series of corollaries to these propositions will be presented. These corollaries represent the opportunities for empirical examination of the propositions which comprise Adaptive Motivation Theory.

A word of caution is in order. Since the theory is a relatively novel approach to the question of motivation, it must remain malleable. For that reason, the corollaries should be thought of as samples of a larger domain of empirical questions. Some of these questions have not yet occurred to us. Some of the corollaries which we will present will eliminate themselves at later points for logical reasons rather than empirical ones. Finally, there is work currently being done in several areas which will likely have an impact on some of our major propositions. This work includes Sternberg's (1978) research program on componential analysis, some recent work of developmental psychologists on concept formation and use, and some research currently being carried out by Colberg, et al.(1982) on inductive reasoning. For those reasons, the theory as a dynamic set of propositions rather than a static one. It

will and should change in light of additional logical examination and empirical data.

Research Hypotheses

1. There are individual differences in the parameters of motivational systems controlling intentional behavior.
2. Within individuals, the parameters of motivational systems change over time.
3. Motivational structures change in relation to changes in concepts.
4. Motivational structures are affected by reasoning ability, both deductive and inductive.
5. Environmental demands for information processing affect concept formation.
6. Environmental demands for information processing affect changes in motivational structures.

Corollaries

- 1.a. Individuals will manifest reliable differences in identifying causes of intentional behavior in others.
- b. Individuals will manifest reliable differences in identifying causes of their own intentional behavior.
- c. Individuals will manifest reliable differences in both linguistic and episodic memory for stimulus sets.

2. a. Individuals will manifest reliable patterns of change in motivational systems.
- b. Individuals will move from a more concrete representation of work environments to a more abstract representation over time.
- c. Individuals will move from an ego-centric conception of work related stimuli to a socially defined conception over time.
- d. Individuals will take an increasingly active role in environmental interactions over time.
3. a. The process of concept formation will mediate the speed with which individuals move from a concrete to abstract conception of the work environment.
- b. Linguistic ability will affect concept formation, and in turn, the movement from concrete to abstract representation of work related stimuli.
- c. Linguistic and episodic memory will affect concept formation, and in turn, the movement from concrete to abstract representation of work related stimuli.
- d. Exposure to work related stimuli (experience or tenure in the position) will affect work related concept development.
4. a. Deductive reasoning capacities will affect the speed and consistency with which individuals classify novel work related stimuli.
- b. Rule derivative inductive capacity will affect the rate at which an individual changes motivational structure.

- c. Event predictive inductive capacity will affect the rate at which an individual changes motivational structure.
 - d. Individuals high in both inductive and deductive reasoning will be more likely to describe their motivated behavior in active and intentional terms.
5. a. Complex work environments will be related to complex conceptual systems for representing that environment.
- b. Individuals in complex work environments will be better described by motivational structures higher on the hierarchy than individuals in simple work environments.
6. a. Individuals in complex work environments will move through the motivational hierarchy more rapidly than those in simple work environments.
7. a. Social perception will mediate the social learning attributions of individuals for motivated behavior (both their own behavior and the behavior of others).
- b. Self esteem will mediate the cognitive and intentional attributions of individuals with respect to their own behavior.

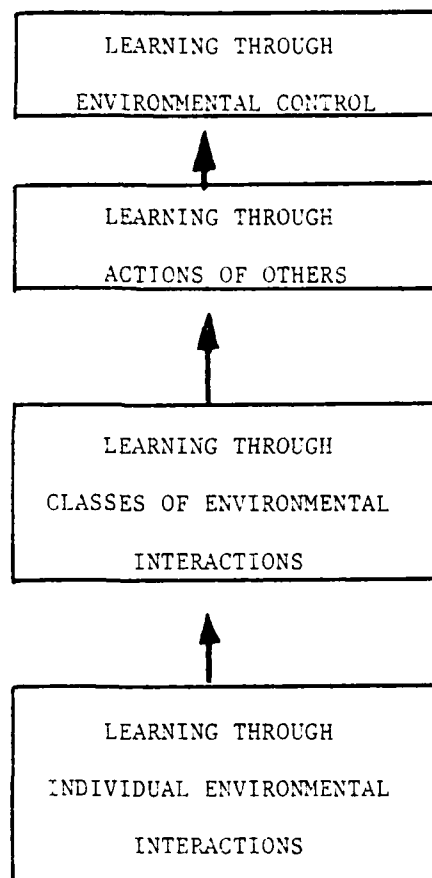


Figure 1: Learning Hierarchy

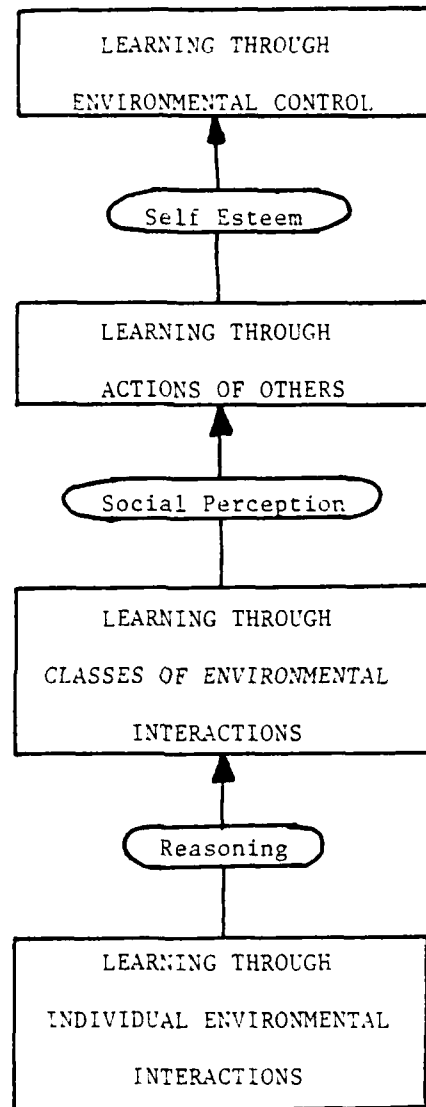


Figure 2: Learning Hierarchy with Individual Difference Mediators

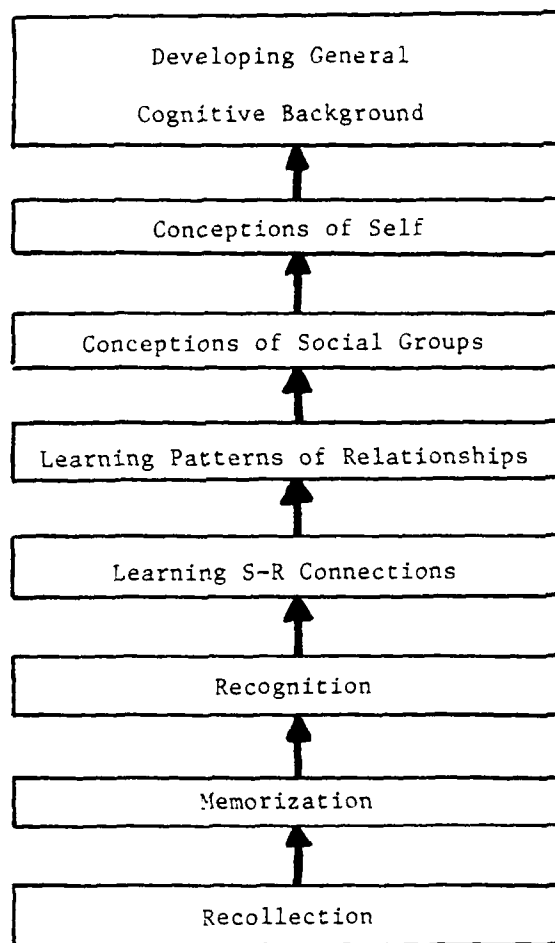


Figure 3: Ryan's Learning Subdivisions Hierarchically Arranged

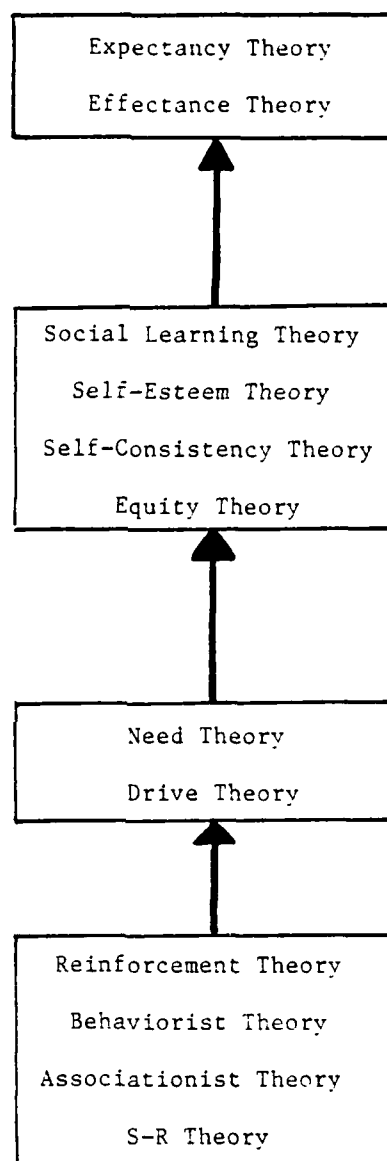


Figure 4: Groupings of Motivation Theories

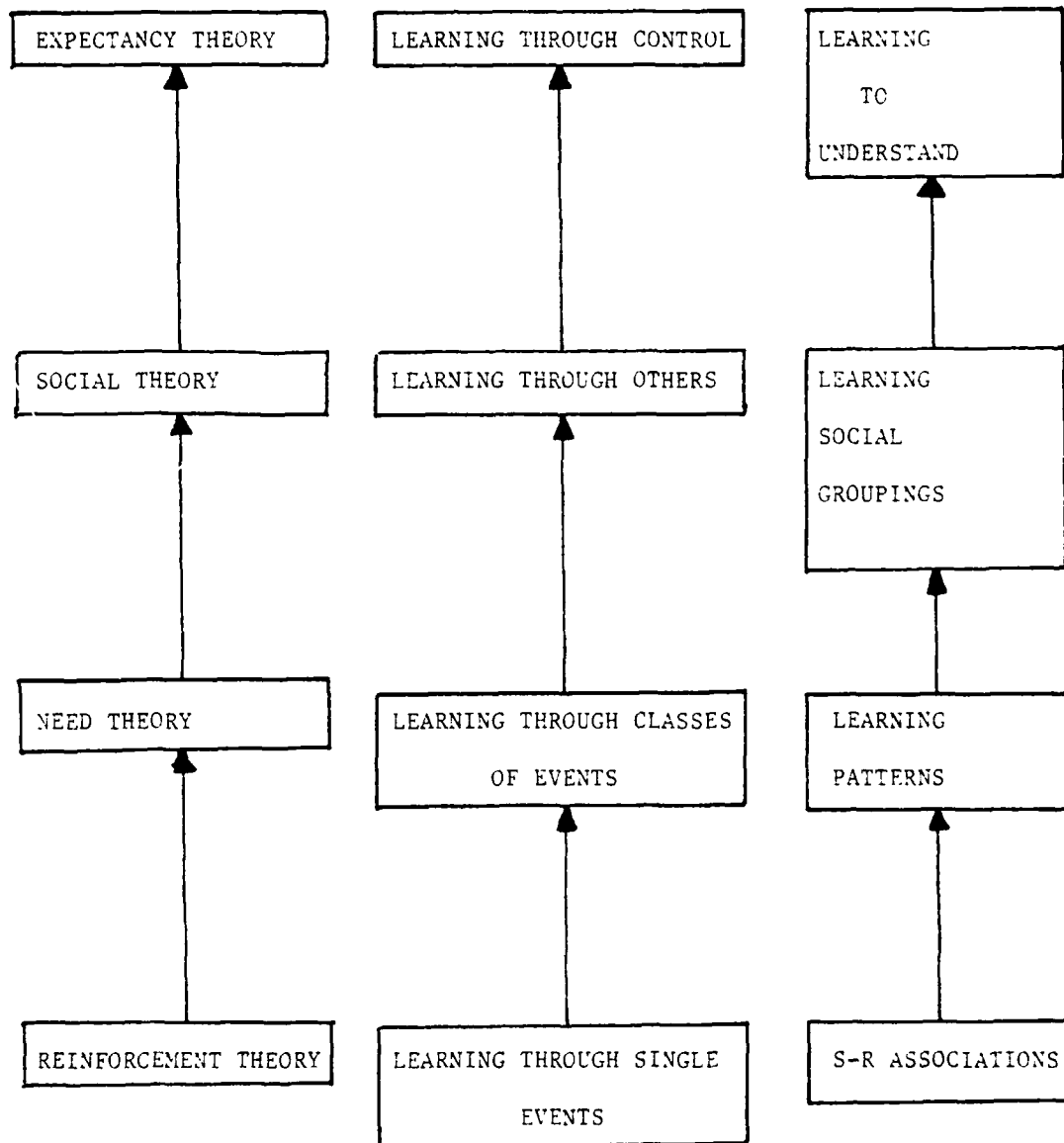


Figure 5: Three Different Views of the Motivation Hierarchy

Activity in First Year

Since most of the activities to be described have been presented in some detail in previous Quarterly Progress Reports, this section will simply provide a recapitulation of those activities so that the reader may match the activities to the statements of the theory and propositions presented above.

Literature Reviews

Given the preliminary nature of the theoretical statement of Adaptive Motivation Theory, it has been necessary to carry out a number of literature reviews in areas which would seem to have relevance to the components of the theory. These reviews have included:

- a. Motivation
 - i. Work
 - ii. General
- b. Cognition
 - i. Parameters
 - ii. Developmental Aspects
 - iii. Relationship to Motivation
- c. Epistemology
 - i. Assumptions

ii. The Role of Reasoning

d. Social Learning

e. Social Cognition

f. Concept Formation

g. Turnover

h. Satisfaction

Most of these reviews have been completed. They have been rather specific in their focus since our purpose was to uncover data and logic with implications for the theory as stated rather than to derive components for some unarticulated theory. Much of the material reviewed has been of only peripheral value to theory refinement. In fact, the end result of the reviews in several cases has been to identify other sources of material which must be examined. We are currently beginning a new round of searches. These reviews are in the areas of learning strategies and hierarchies, theories of intelligence, domains of motivated behavior, inductive and deductive reasoning, memory, and the relationship between environmental demand and concept formation. There is no assurance that these reviews will not simply suggest still other reviews. Nevertheless, this is the nature of deductive theory building - it depends on the logical relationships among propositions. Only when

these relationships can be stated in some testable manner can the empirical work begin.

Pilot Studies

Our reservations about empirical work notwithstanding, it has been possible to begin some preliminary work on the measurement of certain parametric characteristics of our motivational system. These characteristics are the individual difference variables described above. They include cognitive skills, social perception, self-esteem, and attributions related to motivated behavior. We will administer and evaluate the effectiveness of these measures as operational definitions of some of the important components of the theory.

We have made a major shift in emphasis in the last several months. At the outset of our research, we were rather narrowly concerned with the issue of concept formation and its relationship to environmental stimuli. We are now more broadly interested in reasoning and problem solving. As can be seen from the statement of the theory, this is the task which confronts an individual - solving the problem of adaptation. In order to solve that problem, reasoning and memory are critically important. As a result, we are now examining the wide variety of cognitive activities which might affect the nature and number of concepts derived from or applied to a given environment. We see this as a rather substantial step forward in theory development.

Base Rate Data

One of the major implications for the theory which is being developed concerns the fit between individuals and work environments. A corollary of this implication is that individuals will leave environments which are not well matched to their motivational structure. This will be particularly true for individuals who are new to an environment such as the world of work. Thus, we might expect that individuals who are new to the labor force will display movement patterns which are different from those who have been in a work environment for some time. In a sense, we feel that motivational patterns may be critically (although not necessarily irreversibly) affected by early work experiences. In order to have some way of assessing the relative impact of matching vs. non-matching individual/environment interactions on withdrawal or avoidance behavior, it is necessary to have some base rate of movement. For that reason, we have begun collecting labor movement statistics for individuals of various ages in both military and non-military environments. In non-military environments, this amounts to turnover and unemployment statistics. In military environments, the equivalent index is a separation statistic. These base rates will be used to draw inferences with respect to the match between certain environments and certain individual difference characteristics.

Discussions with Others

During the past year, the structure of the theory has been presented on several occasions, both domestic and foreign. These occasions have allowed for modifications and refinement of various

propositions and corollaries. In addition, I have taken several trips to speak with individuals whose work has relevance for Adaptive Motivation Theory. The most fruitful of these has been with Joseph Veroff of the Survey Research Center of the University of Michigan. Dr. Veroff has written a book in social incentive theory which has added substantially to my considerations of Adaptive Motivation Theory. Such discussions are very useful in extending the implications of the theory to other areas.

Scheduled Activities for the Second Contract Year

During the next year, several goals will be met. The first will be a completion of the primary and secondary literature reviews. This will allow for the final statement of the theoretical propositions and the experimental corollaries. Several of these reviews will be combined to form a series of Technical Reports.

In addition, a series of pilot studies will be completed which will address the issue of measurement integrity of the alternative individual difference measures.

An additional set of pilot studies will involve interviews with individuals regarding attributions which they typically make regarding the motivational systems of themselves and others. From these interviews, it is hoped that a survey instrument can be developed which

will allow for a more standardized description of the various motivational levels which individuals identify for themselves and for others.

Pilot studies of several of the parametric relationships described above will be completed. These will include studies of :a) the relationship between reasoning (both inductive and deductive) and motivational attribution, b) the relationship between experience and the conceptual complexity of the work environment, c) the relationship between various types of memory (episodic and linguistic) and individual motivational styles and attributions, and d) the relationships between individual difference mediating variables and motivational attribution systems.

A continuing activity for this year will be discussions with others whose theories and research have relevance for Adaptive Motivation Theory. Several trips will be taken to discuss learning strategies, theories of intelligence, types of reasoning, and individual/situation interactions.

At the end of the year, a series of longitudinal studies will have been designed which will examine the longitudinal aspects of Adaptive Motivation Theory.

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