INFORMATION TO USERS

While the most advanced technology has been used to photograph and reproduce this manuscript, the quality of the reproduction is heavily dependent upon the quality of the material submitted. For example:

- Manuscript pages may have indistinct print. In such cases, the best available copy has been filmed.

- Manuscripts may not always be complete. In such cases, a note will indicate that it is not possible to obtain missing pages.

- Copyrighted material may have been removed from the manuscript. In such cases, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, and charts) are photographed by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is also filmed as one exposure and is available, for an additional charge, as a standard 35mm slide or as a 17"x 23" black and white photographic print.

Most photographs reproduce acceptably on positive microfilm or microfiche but lack the clarity on xerographic copies made from the microfilm. For an additional charge, 35mm slides of 6"x 9" black and white photographic prints are available for any photographs or illustrations that cannot be reproduced satisfactorily by xerography.

Diamante, Thomas

REINFORCEMENT SYSTEMS AND THEIR EFFECT ON PRODUCTIVITY AND WORK ATTITUDES: IMPLICATIONS FOR ORGANIZATIONAL BEHAVIOR MODIFICATION

City University of New York PH.D. 1987

PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark __✓__.

1. Glossy photographs or pages _____
2. Colored illustrations, paper or print _____
3. Photographs with dark background _____
4. Illustrations are poor copy _____
5. Pages with black marks, not original copy _____
6. Print shows through as there is text on both sides of page _____
7. Indistinct, broken or small print on several pages ✓
8. Print exceeds margin requirements _____
9. Tightly bound copy with print lost in spine _____
10. Computer printout pages with indistinct print _____
11. Page(s) _____ lacking when material received, and not available from school or author.
12. Page(s) _____ seem to be missing in numbering only as text follows.
13. Two pages numbered _____. Text follows.
14. Curling and wrinkled pages _____
15. Dissertation contains pages with print at a slant, filmed as received _____
16. Other _____

_____

_____

University
Microfilms
International

REINFORCEMENT SYSTEMS AND THEIR EFFECT ON PRODUCTIVITY AND WORK ATTITUDES: IMPLICATIONS FOR ORGANIZATIONAL BEHAVIOR MODIFICATION

by

THOMAS DIAMANTE

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

1987

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

4/28/87
Date

Chair of Examining Committee

April 30, 1987
Date

Executive Officer

Dr. Angelo Dispenzieri

Dr. John Andreassi

Dr. Joel Lefkowitz

Supervisory Committee

The City University of New York

Abstract

Reinforcement Systems and Their Effect on
Productivity and Work Attitudes:
Implications for Organizational Behavior Modification

by

Thomas Diamante

Adviser: Dr. Angelo Dispenzieri

Problems related to the use of extrinsic reinforcement systems as a means of modifying work behavior were addressed in an experimental work setting. Research from learning theory was extended to develop a solution to these problems. The Premack Principle was therefore investigated as a means of altering work behavior. This approach promises to reinforce organizationally-desirable behavior with the performance of other behavior. By designing a reinforcement system based on the Premack Principle, it is expected that organizations could gain significant benefits. Specifically, such a system could serve to increase productivity while minimizing the development of negative work attitudes associated with extrinsic reinforcement systems. The results of this experiment indicated that a Premack-based reinforcement system was associated with greater productivity in comparison to no reinforcement controls. No significant difference was found however between the productivity in the Premack-based reinforcement system and the productivity in a token-based reinforcement system. The results also demonstrated that subjects reinforced by the Premack-based system reported greater task satisfaction and intrinsic motivation towards the reinforced task than subjects experiencing an extrinsic reinforcement system. Prescriptive application of reinforcement systems was investi-

gated by addressing interactions with personal work values. The favorable effect that the Premack-based system had on task satisfaction and intrinsic motivation was evident only for subjects holding extrinsic work values. Intrinsically-oriented subjects did not significantly differ in their attitudinal reaction to the different reinforcement systems. Within reinforcement systems intrinsic and extrinsic subjects did not differ in their behavioral or attitudinal responses to the reinforcing stimulus. Reinforcement programs in organizational settings have received criticism as they seem to promote the organization's unethical control of individuals. It was of interest therefore to investigate differences in subjects' self-reports of their feeling of having been coerced by the reinforcement paradigms. The Premack-based and extrinsic reinforcement systems did not differ in their effect on subjects' self-reports of having been coerced. However, since the Premack-based reinforcement system promises to influence an individual's work behavior through that individual's own performance of some other behavior, it is suggested that such an approach provides organizations a legitimate means of controlling behavior. The results are therefore interpreted as supportive of the application of the Premack Principle as an ethical means of reinforcing work behavior while avoiding unintended negative effects on work attitudes. The implications of this research for redirecting Organizational Behavior Modification are discussed.

ACKNOWLEDGEMENTS

It is rare to find an individual as supportive and unselfish as has been my editor-in-chief. It is even less likely to have the privilege of sharing one's life with such a person. Somehow, I have had good fortune on both accounts.

I dedicate the writing of this paper to you, Cathy. Over the years you have been both patient and understanding. Thank you for the love and laughter you bring to my life.

Dear Nicole, my daughter of two whose presence fills my heart with joy. Thank you for the numerous edits you so willingly provided with your handy crayon. You are simply adorable.

And to my newest editor (?). You haven't been able to make as direct a contribution to this paper as have the other family members but I suppose you've been busy. Well, little one, enjoy your gestation and I'll see you soon.

To my parents, Rosalie and Nunzio. I thank you both for the support and encouragement you have given me over the years and especially for "being there" everytime I needed you. Dad, you have taught me more about work and life during our excursions to OTB than any formal education could. Mom, your role in my education began well over twenty years ago with nightly lessons in the kitchen using Janet's blackboard. I have been very luck to have been born to such fine

parents. I hope that my children will someday feel as proud of me as I am of both of you.

My siblings have also been a source of encouragement. Joe, as my wiffle-ball companion and older brother, you have always provided me with what I needed. At times these were simple words of sound advice, at other times, these were the keys to your sports car (boat). Thanks for your words but special thanks for that car! Nancy, you were the first of us to pursue higher education, thanks for leading the way. Last but certainly not least, Janet. I am very proud of you and your accomplishments. I look forward to the bright future for which you have worked so hard.

To my father-in-law Eugene, who has always been supportive of this educational endeavor. You have shown your support in many ways over the years and for this I thank you. It is comforting to know that my children will grow up calling you "Grandpa."

There are two professors that have played a significant role during my graduate education. Dr. Virginia E. Schein, working with you was the highlight of my education. Thank you for your support and guidance. Dr. Angelo Dispenzieri, you have defined the word "mentor" for me. You were an invaluable resource during the writing of this dissertation and you inspire my interests in psychology. Your influence on my development is my benefit.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I Introduction

Understanding behavior as a function of its consequences has not been emphasized in the Industrial/Organizational psychological literature. Reviews by Campbell and Pritchard (1976), Korman, Greenhaus and Badin (1977) and more recently Staw (1984) have all lamented the empirical neglect shown by researchers towards understanding behavior modification in the workplace. This operant technique promises to offer management a simple means of "controlling" organizational behavior. However, the employment of this simple principle has not been a simple matter.

Empirically, reinforcement systems have been found to interact with personality characteristics (Switzky & Haywood, 1974; Yukl & Latham, 1975; Phillips & Freedman, 1985) and have been associated with negative effects on both task satisfaction and intrinsic motivation (Deci, 1971; 1972a,b; Levine & Fasnacht, 1974; Pinder, 1976; Pritchard, Campbell & Campbell, 1977). Practically, the implementation of such a managerial system suffers from misunderstanding, misapplication, and ethical concerns surrounding the issue of "controlling" human behavior (Foa & Emmelkamp, 1983; Luthans & Kreitner, 1975; Whyte, 1972; Argyris, 1971; Waird, 1972). If behavior modification is to become a managerial practice, research must begin to address these empirical, practical, and ethical considerations.

The application of the "basic principles of behavior" to organizational settings has been described as "organizational behavior modification" (O.B. Mod.) (Luthans & Kreitner, 1975). Other terms have also come under the rubric of "behavior modification in the workplace," such as applied behavior analysis and behavior contingency management. Regardless of the choice of term, the behavioral principle remains the same. The emphasis is on changing observable behavior through the planned manipulation of external stimuli.

Aldis (1961) was among the first to suggest that industry could benefit from the work of B.F. Skinner. Aldis felt that management relied too heavily on punishment rather than positive reinforcement to control work behavior. In his article entitled "Of Pigeons and Men," the potential benefits of relying upon operant psychology as a means of producing organizationally-desirable work behavior were put forward. Behavior at work was to be best understood, predicted, and controlled by identifying the "contingencies" in the workplace. In essence, this work suggested that management had best ignore the internal psychological states of the worker and instead focus on external work behavior vis-a-vis environmental consequences. By focusing on the consequences of behavior, management would be able to control work behavior much as the pigeon's behavior was controllable in the laboratory. External consequences and overt behavior were proper concerns for the manager. This was a major stepping stone for behaviorism in the workplace.

Management theory attempts to delve into the internal state of the worker in order to understand behavior. Cognitive motivation theorists have emphasized the role of needs, values, wants, expectations, and desires in explaining work behavior (McCormick & Ilgen, 1980). Theories that have emphasized subjective dimensions have not however provided the manager with either a practical or an efficient means of controlling or explaining the cause of a particular behavior (Murphy, 1972; Babb & Kopp, 1978; Luthans & Kreitner, 1975).

While some theorists have utilized these internal "motivational" models in helping to understand behavior at work (Graen, 1969), Luthans and Kreitner (1975) have insisted that: "... in dealing with the human problems facing today's management, understanding is not enough. Something must also be done about changing behavior in organizations" (p. 11). "Changing behavior" is the focus of behavior modification.

Nord (1969) criticized human resource management for being "extremely conversant" with Maslow and Herzberg and "totally ignorant" of Skinner. In 1953 Skinner warned management that they were headed in the wrong direction. Luthans and Kreitner (1975) quoted Skinner in this regard: "The practice of looking inside the organism for an explanation of behavior has tended to obscure the variables which are immediately available for a scientific analysis. These variables lie outside the organism in its immediate [environment]" (p. 31).

Luthans and Kreitner (1975) in preparing management for the coming of O.B. Mod. looked at the situation from a "scientific" perspective. The goals of science are to understand, predict, and control. Whereas cognitive theorists have aided our understanding of organizational behavior, they have "generally failed" to help predict and control it. There is no choice, they add, but to look for an "alternate" model.

This paper will address primarily the utilization of the "external" approaches to management in empirical investigations. However, the writer will find it a difficult task to completely ignore "subjective variables." While the utility of internal explanations of work behavior has been criticized (Luthans & Kreitner, 1975; Babb & Kopp, 1978) effective application of O.B. Mod. demands consideration of subjective needs, values and expectations in the workplace. Generalization from the rat's operant chamber to the worker's domain is a complex matter.

The topic of behavior mod. is inevitably a topic of "control." Some theorists have found control through behavior mod. to be incompatible with personal autonomy and freedom while others insist that the two need not conflict (Argyris, 1971; Skinner, 1971; Whyte, 1972; Babb & Kopp, 1978). The behaviorist contends that behavior mod. is merely "systematic use" of a naturally occurring phenomenon. There is hardly a walk of life that does not involve "behavior change" as a result of contingent consequences.

Luthans and Kreitner (1975) relied on the words of Skinner: "We all control, and we are all controlled ... We respond to contingencies placed on us and we place contingencies onto others. Life itself is a dynamic process of 'shaping' between individuals" (p. 53).

Control is an intrinsic feature of society. Parents "stroke" the child when he/she is "good" and spank the child when he/she is "bad." Organizations promote the employee when he/she is "good" and demote when he/she is "bad." Society incarcerates when people are "bad" and rewards (gives jobs, education, etc.) when people are "good." These daily examples of "control" are ubiquitous yet, go unnoticed. No one questions these examples of control. The reason is that the "means" by which behavior is controlled and the "purpose" for such control is socially-acceptable. Should the "means" or the "purpose" depart from social "legitimacy" then a negative reaction is manifested. For example, spanking a child for "no good reason" is offensive. It serves no "legitimate" purpose. Condemning a criminal to "cruel and unusual punishment" is an illegitimate "means" of controlling behavior. It is thus not "control" that is at issue but the method and purpose of its presence.

Luthans and Kreitner (1975) referenced McGinnies and Ferster who summarized the issue in 1971. According to these reviewers the problem lies in the use (or more accurately, misuse) of behavioral principles.

> Social situations have long been manipulated both practically and deliberately. Ever since Machiavelli, and perhaps before, there has been fear of the control and manipulation of one person's behavior for the benefit of another. With the development of a laboratory science of social psychology, where social phenomena are developed in prototype form and actually shaped and manipulated, a technology [systematic use] is becoming available to influence all social situations rationally and self-consciously. This raises questions concerning the ethics of such manipulation (p. 178).

The issue revolves around the "social-acceptability" of the technique's goals and methodology. Another problem with the application of behavior mod. has resulted from an inadequate understanding of what exactly comprises the subject area.

The education of the non-behavior-modifier is likely to be a non-representative sample of the topic's domain. Thus "stimulating" concepts such as aversion therapy and flooding (implosion therapy) become definitive of behavior mod., enjoying widespread publicity. Luthans and Kreitner (1975) accurately noted that popular movies (e.g., A Clockwork Orange (Burgess, 1963)) and books (e.g., Nineteen Eighty Four (Orwell, 1949)) have paired behavior mod. with nausea, electrocution, and the reduction of individualism to the conformity of the state. The result has been not only justified concern for these applied techniques per se, but also a general "conditioned emotional

response" which has been transmitted to the public (including managers) in relation to the applications of "behavior mod."

This unfortunate misunderstanding has confused the idea of "control" as being the antithesis of "freedom." Illegitimate "control" has become synonomous with behavior mod. Behavior mod. is thus seen as a threat to our individuality, freedom, and dignity. Skinner explained the confusion: "The traditional struggle for freedom has been a matter of freeing people from what we [the behaviorist] call aversive control... Unfortunately, we have come to the conclusion that all control is wrong... this is something we must escape from" (from a conversation with Hall, 1972, p. 66).

Without belaboring the ethics of control, (although it deserves considerable attention, see for example, Craighead et al., 1976) the writer wishes to make a point. "Control" over the behavior of individuals is acceptable in American society, if it is done in accordance with American values. These values determine "what" behaviors can be changed (by explaining "why" it is appropriate) and "how" they can be changed. It would thus seem that "control" through socially-acceptable means aimed at socially-acceptable goals will not meet resistance. It is the "how" and "why" one goes about "controlling" within society that determines backlash, not "control" per se.

The forthcoming literature review will demonstrate the various means by which empirical investigations have controlled behavior in

organizations. These studies have relied chiefly on an extrinsic means of controlling behavior (i.e., being characteristically inappropriate, "unnatural" or "out of the ordinary" for the situation). Ethical criticism has therefore abounded in light of the nature of O.B. Mod. methodology. This "ethical" criticism will be complemented in this review by the findings of recent empirical research. Specifically, rewarding job behavior through extrinsic means has been shown to negatively impact on an individual's task satisfaction and intrinsic motivation. Moreover, the "nature" of these reinforcement systems have moderated the occurrence of this undermining effect (Deci, 1971, 1972a,b; Levine & Fasnacht, 1974; Kruglanski, 1975a,b,c; Ross, 1975; Staw et al., 1980 and others).

Complicating the matter further has been recent empirical interest in understanding the interactions between extrinsic reinforcement systems and "personality." Empirical investigations of O.B. Mod. have noted the importance of "personality" as a variable which when interacting with reinforcement systems has destroyed the effectiveness of the behavioral paradigm (Yukl & Latham, 1975). Extrinsic reinforcement systems have been found to be more cognitively debilitating to those individuals with stronger "extrinsic" work values than to those with stronger "intrinsic" work values (Phillips & Freedman, 1985). Much criticism has thus been levied not only at O.B. Mod.'s ethical problems but also at the undermining impact it has had on the individual's attitude towards a work task and desire to perform it (Levine & Fasnacht, 1974; Pinder, 1976; Pritchard et al., 1977).

O.B. Mod. can be described as a managerial tool which has come to be viewed as an unethical means of changing work behavior. The technique is impractical to implement and threatens to eliminate satisfactions that the individual derives from performing the work itself. Clearly, O.B. Mod. must address these philosophical and empirical criticisms if its technology is to survive as a viable managerial alternative.

Chapter II Behavior Modification

This chapter presents an overview of basic behavior modification (mod.) principles. Definitions, concepts and terminology in this area will be highlighted in order to provide a framework from which operant theory in the workplace can be addressed.

This chapter however will not produce an exhaustive review of existing behavior mod. technologies. The reader is referred to Bandura (1969), Redd et al. (1975), Tharp and Wetzel (1969) and Craighead et al. (1976) for such.

This chapter is needed because of its "basic" nature and because the misuses and failures of behavior mod. (both in clinical and industrial/organizational settings) have been attributed to a "misunderstanding," "misapplication," or "misstatement" of basic operant principles (Foa & Emmelkamp, 1983; Mawhinney, 1975; Abernathy, 1978).

A. Terminology and O.B. Mod.

Heiman (1975) noted the need for "educating" O.B. Modifiers in the meaning of operant terms and concepts. Dismayed at behavior mod. applications which have used operant terms and concepts incorrectly (e.g., Jablonsky & DeVries, 1972), future O.B. Modifiers were warned: "Operant terms, concepts, and applications are not as 'simple-minded' as they may superficially appear (p. 168)."

Babb and Kopp (1978) blamed "problems in interpretation" of operant concepts as a barrier in the development of behavior mod. in the workplace. They mentioned that organizational theorists are "reluctant" to use the complex terms and concepts of the operant paradigm. (Indeed some organizational theorists have felt free to discuss these, despite their inaccurate definitions or confusing use of operant terminology; for example, Yukl & Wexley, 1984, p. 22; Carroll & Tosi, 1977, p. 66; Campbell & Pritchard, 1976, p. 121). The inconsistent use of operant terminology results in conceptual and operational problems for researchers trying to understand, apply and replicate behavior mod. research in the workplace. The following overview provides a fundamental understanding of the basic principles of behavior modification.

B. Behavior Modification Defined

Behavior mod. is best defined as the application of the principles of learning in order to produce changes in behavior. This encompasses any approach which has as its premise the utilization of learning theory as a means of intervention. Ullman and Krasner (1965) defined behavior mod. as "the application of learning theory as a means of altering [maladaptive] behavior" (p. 2).

General principles of learning have been applied to juvenile delinquency (Stumphauzer, 1973); habitual or self-control disorders (Davies, 1962; Harris & Rathberg, 1972); anxiety management (Wolpe, 1969); sexual dysfunctions (Masters & Johnson, 1975); and severely

disordered behaviors (Meichenbaum, 1966; Davison, 1966). To facilitate understanding behavior mod. as it will relate to industry, it can be dissected into three "established" areas: behavior therapy, behavior mod., and applied behavior analysis (Willis, 1976).

"Behavior therapy" refers to the utilization of learning principles in the clinical setting. These applications often rely heavily on the "classical" conditioning paradigm for example, systematic desensitization (Wolpe, 1969); implosion therapy or flooding (Stampfl & Lewis, 1967); and aversion therapy (Powell & Azrin, 1968).

Behavior mod. refers to the use of learning principles typically in educational or community settings. The focus here, is on "operant" (or instrumental) conditioning. Behavior is understood as being a function of its consequences (Skinner, 1962). Consequences which are "contingent" upon a behavioral response "control" the performance of that response. Behavioral change and management can thus be gained by manipulating consequences and making them contingent (dependent) upon performance of a behavior. The use of this operant principle has taken many forms (e.g., reinforcement and punishment, modeling, token economies, shaping; see Redd et al., 1979). Despite such variety, they all rely on the notion that: "behavior is a function of its consequences."

One final term, which often arises in this area is "applied behavior analysis." Applied behavior analysts rely on neither

classical nor operant paradigms exclusively. What they do rely on, however, is the identification of a "behavioral change" technique and subsequent empirical evaluation of this technique.

The clinical and experimental history of behavior mod. has emphasized the use of "ABA" reversal designs in evaluating its efficacy. This has avoided the major interpretive problems while not suffering from low internal validity. The design controls for "history" by removing and reintroducing the intervention (an otherwise major threat) and results can be compared to other "B" interventions. Rival explanations (that results may be due to unknown events or simply be a response to intervention regardless of its quality) are thus minimized (see Campbell & Stanley, 1963).

Applied behavior analysts have "set the trend" for behavior mod. research. Within-subjects designs have been the trademark for research in this areea (single-cases are also deemed appropriate; see Skinner, 1963, also Sidman, 1960, and Wolf & Risley, 1971). The primary concern of this research however has not been the evaluation of organizational behavior modification.

In defining behavior mod., the "organizational behavior modifier" is forced to combine the qualities of the applied analyst with the qualities of the operant learning theorist. Behavior mod. for the industrial/organizational psychologist is thus here defined as an operant-based methodology used to modify maladaptive organizational behaviors.

C. Learning Acquisition

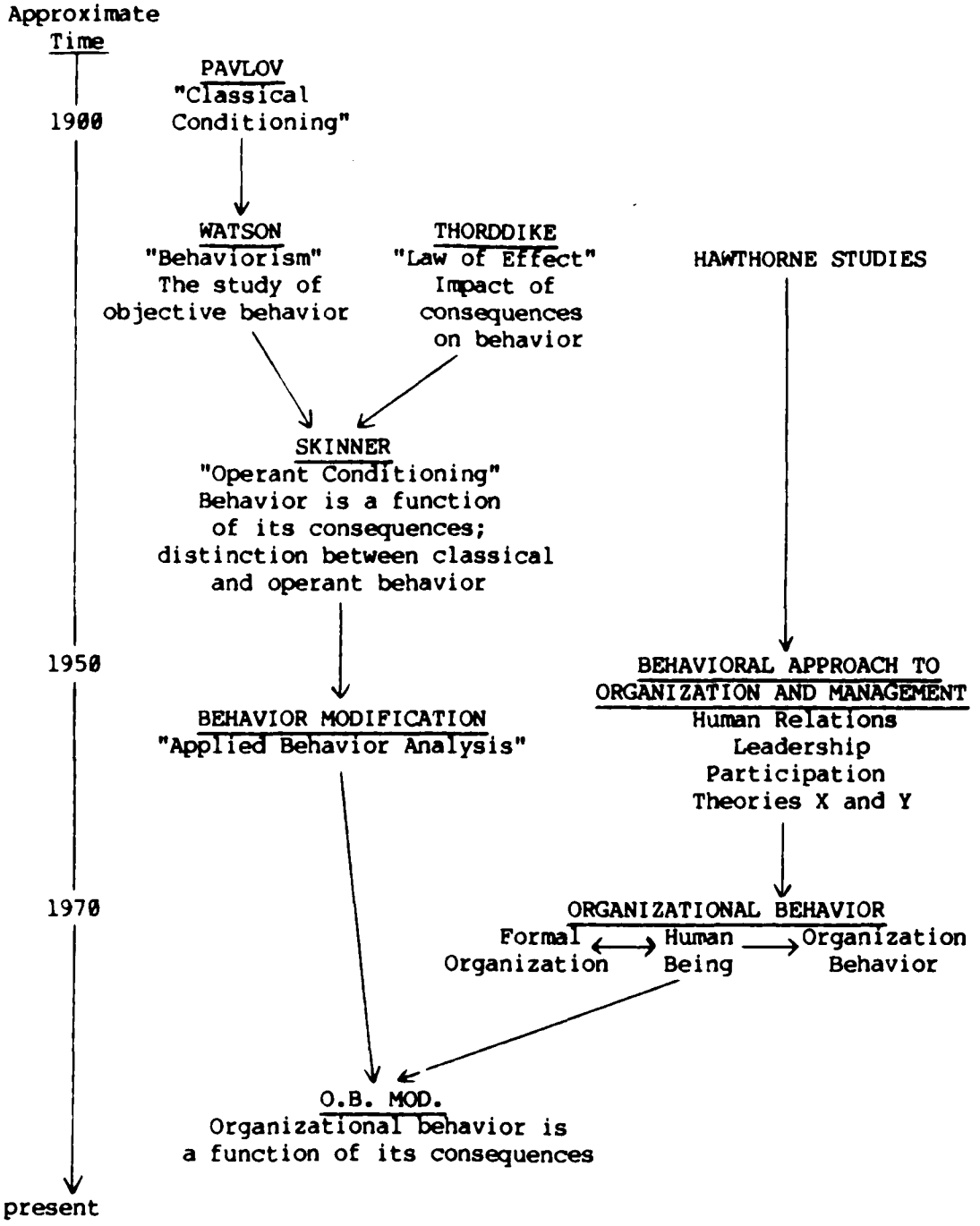
The techniques of behavior mod. are deeply indebted to Watsonian and Skinnerian behaviorism (Luthans & Kreitner, 1975). Using their basic logic a wealth of experimental studies have been performed on the "learning" process (Tarpy, 1975). Learning represents a process by which an organism's behavior is changed. The basic principles of learning explain behavior change through environmental stimuli.

Behavioral change resulting from fatigue or motivational factors is not considered learning. Kimble, in 1961, was sure to eliminate these "internal" causes (fatigue, motivation, maturation) in discussing when learning has taken place. Tarpy (1975) relied on Kimble to define "learning": "...[learning is] a relatively permanent change in behavior which occurs as a result of experience" (p. 4). Watson, in 1913, set the stage for the development of techniques which would aim at modifying behaviors through the environment.

> The interests of the behaviorist in man's doings is more than the interest of a spectator - he wants to control man's reactions as physical scientists want to control and manipulate other natural phenomena (cited in Luthans & Kreitner, 1975, p. 20).

O.B. Mod. owes its existence to the works and philosophies of these early behaviorists. The development of O.B. Mod. as understood by Luthans and Kreitner (1975) is presented in Figure 1.

Figure 1. Historical Development of Organizational Behavior Modification



Reproduced by permission of Scott, Foresman, & Co., ©1975, from Luthans, F., & Kreitner, R. Organizational Behavior Modification.

Watsonian research lead American psychology from conscious experience and introspection, to objective, observable events. The science of psychology was to concern itself only with overt behavior. "The Behaviorist Manifesto," as the article became known, was put forward in 1913 and its influence has since been felt by all sections of society (Luthans & Kreitner, 1975).

Pavlov contributed his greatest work to psychology while studying the physiology of digestion in dogs. Upon entering his laboratory, Pavlov noticed that the dogs began to salivate long before his experiments began. At a loss for an explanation, he labeled the dog's response, a "psychic" secretion. With this new interest, Pavlov changed the emphasis of his experimental efforts and "classical" conditioning was established. The paradigm, we all recall, was quite simple. It is said that an initial "neutral stimulus" (e.g., a tone) becomes a "conditioned stimulus" (obtains meaning) by being paired with an "unconditioned stimulus" (something which automatically evokes a response, e.g., electric shock) which causes an "unconditioned response" (a behavior that is involuntary). In time, presentation of the "conditioned stimulus" (previously neutral) would lead to the elicitation of the "conditioned response" (previously an "unconditioned response"). The importance of contiguity in such associations was researched and elaborated upon by Guthrie (1959). (It is interesting to note that the classical conditioning paradigm was really nothing more than an investigation into the Law of Contiguity that was set forth by an 18th Century philosopher and British empiricist by the name of David Hartley (Schultz; 1981)).

Reinforcement learning theories have been traditionally introduced as a departure from this "classical" paradigm (Luthans & Kreitner, 1975; Redd et al., 1979). Some however have argued that there is really only one conditioning paradigm; a classical one (Tarpy, 1975). Be that as it may, an operant paradigm has been distinguished.

Agreeing with the early behaviorists, reinforcement theorists focused on objective, observable events. However, it was to be realized that freely emitted responses (not evoked), could be controlled by subsequent environmental stimuli. This led to an appreciation of operant or "instrumental" conditioning.

The law of effect discovered by Thorndike in 1913 was a result of years of animal experimentation. It demonstrated that behavior could be explained by its consequence (Redd et al., 1979).

The impact of the law of effect cannot be over-stated. It laid the ground work for much of behavior mod. today. Vroom (1964) in discussing motivation research served allegiance to the law:

> Without a doubt the law of effect or principle of reinforcement must be included among the most substantial findings of experimental psychology and is at the same time among the most useful findings for an applied psychologist concerned with the control of human behavior (p. 13).

The law of effect stated that when a response is reinforced it will lead to the "strengthening" of that response. This process produces learning by "stamping-in" the connection between stimulus and response. The more frequently the two events are paired, the stronger this connection would become. Skinner was to remove the notion of "stamping-in" connections and would qualify the idea that the number of reinforcements would increasingly "strengthen" a response through his work with schedules of reinforcement (to be discussed later) (Tarpy, 1975).

The operant conditioning paradigm controls behavior by manipulating the consequences of an active responder whereas classical paradigms focus on manipulating the consequences of passive responders. The consequence must be contingent upon the performance of a behavior and must occur contiguously in time (Skinner, 1969).

D. Basic Principles of Behavior

1. Operant Paradigms

The operant paradigm takes several forms depending upon the stimulus' effect on behavior and its mode of operation. The terms used to categorize the effect and its mode have been often confused by researchers in Organizational Behavior and so the paradigms will be further elaborated upon.

The consequence of a behavior can be controlled in order to increase (strengthen) or decrease (weaken) the behavior. This can be accomplished by the presentation of stimuli or by the withdrawal of stimuli (see Figure 2 on the following page).

Figure 2 indicates that consequences of responses can be reinforcing or punishing. A reinforcing stimulus is any stimulus or event which leads to an increase in the frequency of a response (Liebert & Spiegler, 1974). This means that a stimulus, in itself cannot be labeled a reinforcer. It is only in relation to its observable effect on a behavior that it may earn the title of "reinforcer."

A stimulus may therefore potentially "act" in many ways. That is to say a stimulus may act as a reinforcer under one set of conditions and may not act as a reinforcer (or possibly even act as punishment) in different circumstances. One must therefore "be careful" when utilizing a stimulus for a specific purpose. There is no way of knowing a priori, whether that stimulus will act as a reward or punisher on behavior.

2. Reinforcement

According to Figure 2, reinforcement is of two natures, positive and negative. The "valence" of the reinforcer is relevant only in that it reflects the mode of presentation. Its purpose remains as a

Figure 2. Operant Applications and Effects.

Effect on Behavior	Operations: Positive (presentation of stimuli)	Operations: Negative (withdrawal of stimuli)
Increase (strengthen)	Positive Reinforcement	Negative Reinforcement
Decrease (weaken)	Positive Punishment	Negative Punishment

stimulus which increases the frequency of a response when delivered contingent upon that response.

It is important however to discriminate between two types. Too often, organizational theorists have addressed these terms and confused them (see, for example, McCormick & Ilgen, 1980, p.277). Even O.B.Mod. reviewers have employed operant terminology with confusing results (Luthans & Kreitner, 1975, p.118). Invariably, negative reinforcement is misunderstood or theorists "by pass" operant terms in order to avoid misapplication (Heiman, 1975).

Positive reinforcement is easy to understand. This refers to the presentation of a stimulus which increases the frequency of a response. A child is given a tootsie-roll for using the toilet. A dog is given a bone for picking up its paw. The tootsie-roll and the bone can be considered to be positive reinforcers if and only if, the child uses the toilet more often and the dog will now pick up its paw for the bone.

A negative reinforcer is not the same as punishment. Like a postive reinforcer, a negative reinforcer is, to repeat the theme, any stimulus or event that increases the frequency of a response. The "valence" however is significant. A negative reinforcer increases the frequency of some behavior through its withdrawal from the situation. It is the elimination of something aversive in the situation contingent upon some response. One example of this is the termination of electric shock to the rat's paw contingent upon pressing a lever.

Another example is the termination of a baby's cries contingent upon being cradled in mother's arms. In these examples, the rat's lever pressing has been negatively reinforced and the mother's cradling behavior has been negatively reinforced.

Although learning theorists speak of no "universal" set of reinforcers, there are "primary" reinforcers that are likely to be "satisfying" to almost anyone (given some level of deprivation). Examples of primary reinforcers are food, water and sex. These are termed "primary" due to their unconditioned nature. That is to say that they do not elicit pleasure as a result of having been paired with another stimulus. It is within the nature of the stimulus that gratification is delivered. (One however must even be careful here when labeling these stimuli; as will be seen.)

A stimulus which acquires reinforcing properties through its pairing with a primary reinforcer is called a "secondary reinforcer." Money, has gratifying value only because it in turn has been paired with the obtaining of food, water, and perhaps other "needs." (It is worth mentioning that stimuli when paired with "non-primary" reinforcers may become secondary reinforcers.) The use of "secondary reinforcers" is more convenient than administering the "valued" stimuli directly. Typically, behavior modifiers administer "tokens" (chips, money, etc.) for desirable behavior which in turn allow the purchasing of primary reinforcers. These uses have been termed "token economies" (Craighead et al., 1976). Although rooted in clinical,

educational, and community settings, we will see that industry has been quick to apply the "token economy."

A consequence of a response may be "punishing" in nature. If so, it will serve to decrease the likelihood of that response being repeated in the future. As before with reinforcement, there is no way of knowing if a stimulus is "by nature" a punishment.

Punishment, like reinforcement, comes in two varieties; positive or negative (cf. Figure 2). A stimulus may be used to decrease the frequency of a response being emitted by its presentation or its removal. When a "presentation" is the mode we are said to have used "positive punishment." When a behavior is decreased by removal of a stimulus, it is said that "negative punishment" has taken place (Craighead et al., 1976). The term "response cost" is used to describe the withdrawal or loss of material reinforcers contingent upon a behavior (Redd et al., 1979).

The most popular form of negative punishment is used by parents daily. When a child's toys are withdrawn from him/her (contingent upon a behavior), by placing the child in his/her room, negative punishment has taken place (assuming the child's room is free from radios, stereos, games, telephones, etc.). Stimuli (toys) have been removed in order to decrease the frequency of some response.

Clinical work with behaviorally disordered children often relies on "time-out" to control behavior (Drabman & Spitalnik, 1973). This

procedure utilizes the removal of the opportunity to gain positive reinforcement as the punishing stimulus. Sending a misbehaving student into the hallway, is a good example. The teacher assumes that removal from the opportunity to gain positive reinforcement will have a punishing effect. (Too often, however, sending a child out of the room brings nothing but laughter from his/her playmates, attention, and even "star" status among one's friends. The teacher has then positively reinforced a behavior.)

3. Extinction

The cessation of reinforcement that was contingent upon some response is known as "extinction." Responses that no longer occur due to the termination of its reinforcing consequence are said to have "extinguished," (Redd et al., 1979). Behavior controlled by some contingent consequence is weakened through removal of that consequence. That is, the functional relationship between a response and some consequence is terminated.

Extinction demonstrates its effect when the contingencies that are withheld are exactly those contingencies that maintained behavior. This would require careful diagnosis as to what functional reinforcers are maintaining a behavior (Redd et al., 1979). A "functional analysis" identifies when a response is emitted (antecedant), what the response is (behavior) and how it is maintained (consequence), (Willis, 1976). The following addresses the antecedants and maintenance of behavioral responses.

The behaviorist defines a stimulus on the basis of its observable effects on behaviors. Whether a stimulus will reveal itself as a reinforcer or punisher, is however often dependent upon the organism's "internal" needs (hungry or thirsty), values (money) and desires. Proper utilization of operant theory, an external, observable, objective, data-oriented, technique, thus necessitates the assessment (or at least consideration) of "internal" states if it is to be applied with a specific purpose in mind (the strengthening or weakening of behavior). The applied significance of this dilemma is clear. The post-hoc definition of reinforcement debilitates the ability of the industrial psychologist to predict and control work behavior without resorting to what is tantamount to trial and error.

Behaviors can be reinforced everytime they are exhibited or intermittently. The acquisition of a behavior is facilitated by the rewarding of that response "continuously." Should the organism not have the response in its behavioral repertoire (i.e., we cannot wait for it to be freely emitted by the organism and then reinforce it) the process of "shaping" is utilized. In this procedure, successive approximations of the desired behavior are reinforced until the desired behavior is emitted. ("Prompting" may be used to aid the organism in emitting "approximate" behaviors should this be necessary) (Tarpy, 1975).

4. Schedules of Reinforcement

The maintaining of behavior can be accomplished in different "ways." A schedule of reinforcement is a "rule" used to determine which occurrence of a response will be reinforced (Reynolds, 1968).

In 1957 Ferster and Skinner identified specific patterns of behavior associated with the differential criteria for dispensing reinforcers. Reinforcement can be dispensed according to the ratio of responses to reinforcements or according to the time elapsed between responses (Redd et al., 1979).

When a response is reinforced every third time it is exhibited, the schedule is considered to be a fixed-ratio (FR-3). If, on the other hand, the targeted response is reinforced "on the average" about every third time it is exhibited, then the schedule is considered to be a variable-ratio (VR-3). (Reinforcement may occur after the first, or fourth, etc., the average however, will be three.) Reinforcing every targeted response upon its exhibition is considered "continuous reinforcement" (CRF) and is best for quick response acquisition.

Consequences of behavior can also be dispensed according to time. A "fixed-interval" schedule reinforces the first targeted response emitted after a certain amount of time has passed (FI). A "variable" time-interval schedule reinforces the first targeted response emitted after some "average" amount of time has passed. This is termed a "variable-interval" (VI) schedule.

Different schedules of reinforcement produce different response patterns. A study by Weisberg and Waldrop (1972) indicated the effect of an FI schedule of reinforcement on the United States Congress. The significance of reinforcement schedules lies primarily in their differential resistance to extinction.

Behaviors that have been reinforced on a fixed-schedule (FI or FR), are notoriously low in their resistance to extinction. For example, if a white rat has received a pellet for every third press of a lever (FR-3) and suddenly these pellets fail to be delivered on the third press (no reinforcement), the lever press behavior will quickly stop.

A variable schedule's resistance to extinction is demonstrated by the persistant, endless, tireless, wrist of the slot-machine gambler. The "variable" schedule is unpredictable. Any response "might" deliver the reinforcement. Thus many coin-inserting responses will be emitted before that response is extinguished. Variable schedules maintain behavior long after extinction has begun.

O.B. Modifiers have employed reinforcement schedules in their intervention. Many behaviors have felt the impact of schedules of reinforcement.

> We are more willing to work harder on pay day; absenteeism is less common; the student who has dawdled along all semester suddenly accelerates

> his study as examination time approaches in order to secure some slight reinforcement at the end of the term; the businessman makes a strong effort to clean up his desk in time for vacation; most people increase their efforts to make a reinforcing appointment on time (Lundin, 1961, p. 80).

It has been repeatedly emphasized that a consequence must be contingent upon performance of a behavior if conditioning is to occur. In other words, the relationship between a behavior and its consequence must be clearly defined. In addition, the consequence must also be contiguous; that is, occur close-in-time to the exhibited behavior.

Contingencies are not always in effect. Whether or not a particular reinforcement schedule is in effect is "signaled" by stimuli in the environment. People, places, situations, and the like, alert us as to what contingencies are in effect (Redd et al., 1979).

Driving down an open highway and seeing a highway patrolman ahead will tell you that a contingency is in effect. If you speed, you will be punished (ticketed). You consequently slow down as you approach the benevolent officer and having done so, speed up as soon as you perceive the contingency to have terminated (police car is no longer in sight).

A four-year-old is well-behaved, mild-mannered, and quiet with his/her Mom. As soon as he/she gets to Grandma's, the child becomes a "problem." The child is aware of environmental cues that announce that specific contingencies are in effect. At home, undesirable behavior is punished; "good" behavior is rewarded (hopefully). At Grandma's, anything goes!

Stimuli in the environment which serve to announce the definition of a contingency are termed "discriminative stimuli" (S^Ds) by learning theorists (Redd et al., 1979). The control that S^Ds have on our behavior is termed "stimulus control." In the above example Mom has exerted stimulus control over the child.

5. Punishment

Reliance on "punishment" to control behavior has been criticized by behavior modifiers (Luthans & Kreitner, 1975; Nord, 1969; Bandura, 1969). Punishment however remains a widely used means of controlling behavior in society and particularly in human resource management (see paper by Luthans & Kreitner, 1973; Arvey & Ivancevich, 1980; Sims, 1980).

The use of punishment reflects social philosophy (e.g., "an eye for an eye") as well as results gained by its application (Luthans & Kreitner, 1975). For example, when a response is punished, the termination of that response is quick to occur. The "punisher" (individual performing the punishing act) is then immediately

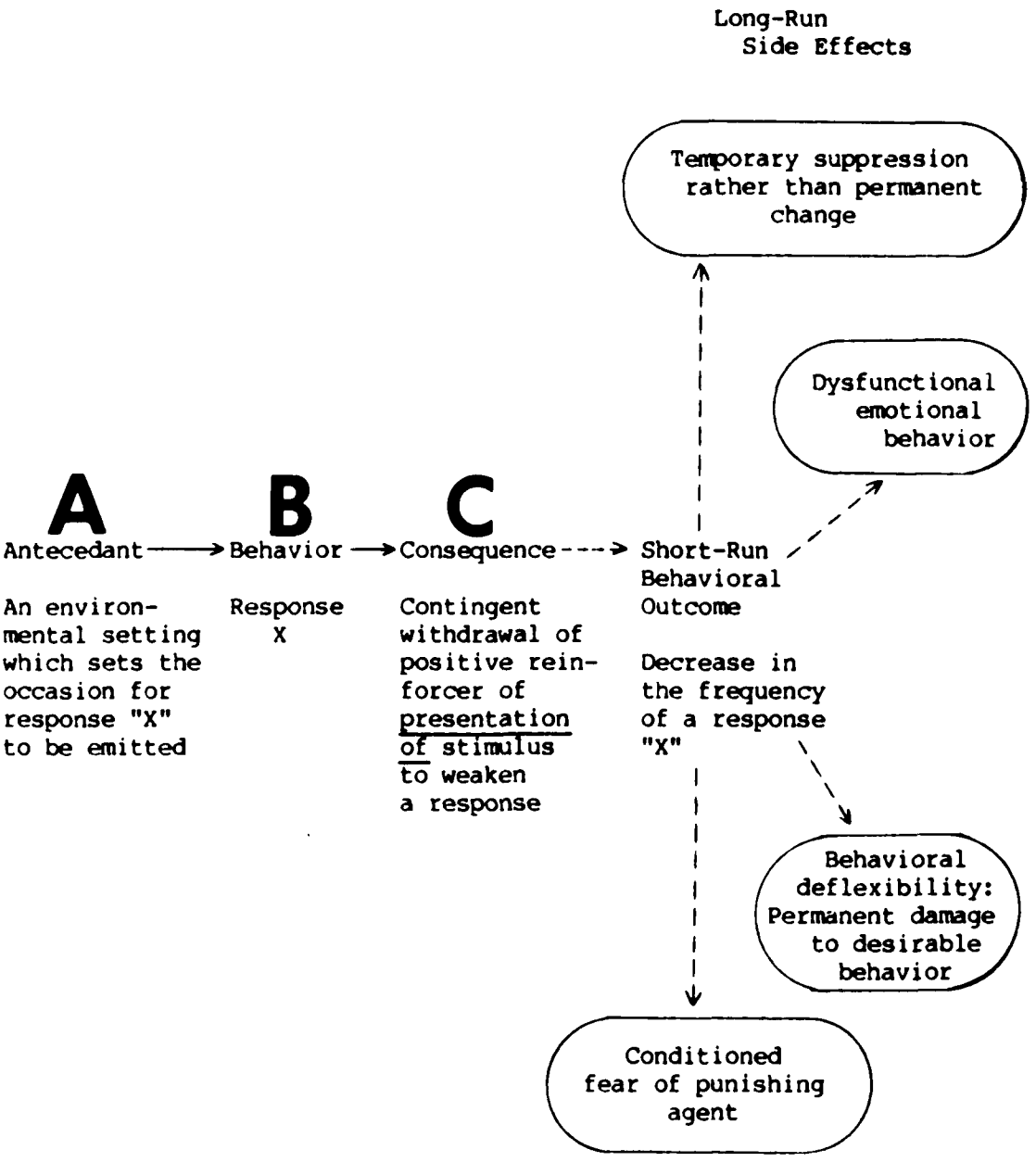
gratified by the termination of this aversive behavior. The "punisher" is thus negatively reinforced for using punishment as a means of controlling others' behavior.

The ease with which punishment removes annoying stimuli must be resisted by the punishing agent. Although punishment does indeed weaken behavior, it also has unintended side-effects. The empirical literature has demonstrated the limitations of punishment. Luthans and Kreitner (1975) summarized these findings. (See Figure 3: The reader should note that these authors used the term "negative reinforcer" as synonomous with "punishment." This, of course, is not the case and their figure is reproduced in corrected format.) In addition to these undesirable side-effects, the punishing of behavior does not produce the alternative "desirable" behavior (see Bandura, 1969 for a discussion on this subject, p. 314).

In 1953, Skinner warned behavior scientists about the application of punishment. Punishment although suppressing behavior initially, will not lead to permanent changes in behavior. As soon as the aversive stimulus is removed from the situation, the punished response will return. It then becomes necessary to rely on continued negative control. That is, in order to ensure a response does not occur punishment must be constantly used (Luthans & Kreitner, 1975).

Unintended consequences on behavior may result from reliance on punishment. Luthans and Kreitner (1975) explained that a behavior

Figure 3. The Effects of Punishment.



Reproduced by permission of Scott, Foresman, & Co., ©1975, from Luthans, F., & Kreitner, R. Organizational Behavior Modification. (The underlined words indicate a correction made by this author.)

which is highly desirable at one time and undesirable at some other time may be "permanently repressed" by ill-timed punishment. They used the example of a child being severely punished for sex-related behavior and later in life suffering from problems due to an inability to engage in sexual behaviors at a now appropriate and desirable point in time.

Although this example seems "removed" from the organizational context, the underlying principle is applicable. A recently hired young, energetic manager may be verbally attacked by his/her peers during a meeting for his/her creative, new approach to solving problems in the factory. Later that month, another meeting is called. Management is in need of some "new ideas" for a factory about to be relocated. Our young manager now finds him/herself "tongue-tied." Conditioning through punishment has resulted in "behavioral inflexibility."

One final undesirable side-effect shown in Figure 3 is conditioned fear to the punishing agent. The punitive supervisor is a stimulus which is constantly paired with an aversive stimulus (the punishment). The supervisor will thus become a "conditioned aversive stimulus."

Punishment is not an effective means of managing individuals. It has the potential to suppress behaviors temporarily; cause dysfunctional emotional behavior; produce behavioral inflexibilities,

and it conditions individuals to fear the punishing agent (Luthans & Kreitner, 1975).

E. Learning Theory at Work

Thus far, behavior has been addressed as being a function of its consequences. This operant-view has been extended to include organizational behavior. Employee behavior has been subjected to the principles of operant psychology.

By understanding the relationship between work behaviors, their antecedants and consequences, a manager can change behavior through environmental (external) stimuli. Managerial effectiveness is then nothing more than the identification of contingencies in the workplace (Korman et al., 1977).

Luthans and Kreitner (1975) have established "guidelines" for effective management. These guidelines simply apply operant psychology to the workplace. Since work behavior is a function of its consequences, the "learning" that takes place at work can be easily manipulated.

In order to effectively change behavior, the manager must first analyze the "functional relationship" between A's (antecedants, S^Ds); B's (job relevant behavior) and C's (consequences). This A-B-C "functional analysis" will allow "proper" application of operant techniques (Luthans & Kreitner, 1975). The manager can measure a

maladaptive performance-related behavior (objectively), establish what "cues" elicit such behavior and attempt to identify the consequences that are maintaining its performance. In short, the managerial task is to 1) deal in terms of objective, specific behavioral events which have an observable effect on the environment; 2) measure the frequency of performance of behaviors; and 3) clearly delineate the relationship between A's, B's, and C's (Luthans & Kreitner, 1975). Indeed this explanation of "learning at work" epitomizes the role of operant theory in controlling behavior. Empirical investigations have relied on this operant explanation.

Organizational behavior modification is an expression of the basic principles of learning. It views work behavior as a response to environmental stimuli. This has lead to "intervention strategies" which have centered around reinforcing organizationally-desirable work behavior. Luthans and Kreitner (1975) elaborated:

> Virtually all organizational behavior is learned. Therefore, the extensive knowledge about learned behavior that exists in the behavioral sciences should be readily adaptable to organizational behavior. Instead of providing the practicing manager with a general understanding of organizational behavior, which the internal approaches have supplied, the O.B. Mod. approach should give [management] a sound theoretical foundation... for shaping, changing and directing organizational

> behavior toward the attainment of [organizational] objectives (p. 12).

Behavioral procedures have equipped the manager with a chance to observe behavior (recording objectively); understand behavior vis-a-vis external stimuli; "intervene" with operant principles to change behavior (recording objectively); and evaluate this systematic attempt through the removal of the intervention and subsequent data recording (Korman et al., 1977).

Effective management becomes a "technical" process. Effective management will understand the A-B-C's of its workforce, be thoroughly versed in operant technology and evaluate objectively [with data] the effects of its "Skinnerian Management." By explaining work behavior as a response to the environment, management has been given a technique by which it can plan a behavioral intervention. Insight into the needs, values, motives and desires of the workforce have been reduced to an archaic status. Behavior and its relationship to the environment is the raison d'etre of the "Skinnerian Manager."

While simple in theory and design, the use and evaluation of learning theory at work is in reality quite complex. The following chapter shall critically review empirical O.B. Mod. research. While consequences in the workplace provide a simple explanation of behavior, their application in empirical investigatons has been more than a simple task.

Chapter III Organizational Behavior Modification: A Critical Review

Industry has responded to the works of the behavioral scientist. Operant principles can be found in training, management theory and more recently as the focus of "strategies for interventon." These "strategies" or O.B. Mod. approaches, have provided the manager with a practical tool for meeting organizational objectives.

Walter Nord (1969) once summarized what management has learned:

> People will be most likely to engage in desired behavior if they are rewarded for doing so. The rewards are more effective if they immediately follow the desired response. Behavior which is not rewarded or is punished is less likely to be repeated. However, punishment is known to have many undesired effects and is often a less efficient means to develop desired behavior (p. 569).

The "fundamentals" of operant theory have been utilized by various industries as strategy for producing organziationally-desirable behavior. These intervention strategies, have however emphasized implementation with much less concern for evaluation.

Consequently, evaluative efforts have not served well the scientist's (or the practitioner's) demand for an understanding of "why" O.B. Mod. interventions have met with success. Well-controlled

research designs are badly needed. Only through internally valid empirical evaluation can O.B. Mod. be taken "seriously" as an effective strategy of intervention by the scientific and managerial community.

O.B. Mod. is, no doubt, in its infancy. We can thus tolerate its rather simple, if not redundant, intervention methodology. However, one cannot tolerate implementation without proper evaluation.

O.B. Mod. will be shaped by its empirical efforts. Investigators must begin to nourish this area with valid research efforts and "stretch" its strategies so that the field may become a useful managerial tool.

A. Operant Principles in Industry

The potential of O.B. Mod. has been overlooked by research despite supportive findings in various applied settings (Willis, 1976; Redd et al., 1979; Craighead et al., 1976; Bandura, 1969). More recently, Staw (1984) wrote: "Behavior modification experiments often result in dramatic improvements in performance, significant in practical as well as statistical terms" (p. 648). Critics however, have argued that O.B. Mod. has been ongoing for many years in management and that this "new" technology is really nothing "new" at all (Locke, 1977; Parmerlee & Schwenk, 1979).

Korman et al.'s (1977) review of personnel attitudes and motivation in the Annual Review of Psychology emphasized the need to research the use of contingencies on behavior in order to develop a tool based upon operant theory that has organizational implications.

> Where then lies the distinctiveness of the O.B. Mod. approach? It's major characteristic may be the mental set with which the manager approaches a situation. O.B. Mod. requires the manager to observe quantifiable behaviors, to establish base rates in order to determine the extent of the problem, to determine what reinforcers are supporting the undesirable behaviors, to estimate what stimulus will reinforce the desired behavior and to chart the frequency of the desired behavior after the reinforcement intervention. It is this critical look at behaviors and contingencies that promises to provide a refreshing addition to the organizational behavior literature" (p. 189, emphasis added).

Others have been wary of eliminating the "internal" orientation to work motivation refusing to reduce the worker to the role of "passive responder" as opposed to "dynamic activator" (Aldis, 1961; Nord, 1969; Luthans & White, 1971). However, it has been noted that the internal and external approaches are not all that different (Gamboa, 1974). It was suggested that management need not "tear itself" between either an internal versus external decision. Using Lawler's (1971) expectancy

model as an example, Gamboa found a reason why management can comfortably remain attached to both approaches. Gamboa (1974) pointed out that both this expectancy model and O.B. Mod. emphasize tying rewards closely to performance. Regardless of one's approach we can agree that the manager should associate a reinforcer with job performance. Of course, the rationale for this guideline differs for the respective approaches.

By tying rewards to performance, expectancy theory purports to influence "internal states" which in turn affect work behavior. O.B. Mod. stresses the importance of pairing performance with reinforcement in order to directly affect behavior. Both approaches assert that behavior can be changed through planned manipulation of external stimuli.

The practical implications of O.B. Mod. necessitates scientific evaluation. The applied behavior analyst must devote effort toward evaluation of O.B. Mod. if this principle is to be utilized with empiricism as its foundation. This review will point out the paucity of well-controlled "evaluative" research. Similar reviews of this nature have been performed by Babb and Kopp (1978) and Elliott and Geller (1980). Both of these past reviews concurred regarding the field's need for well-controlled research. Some of the the criticisms made herein regarding the empirical literature can also be found in these reviews.

O.B. Mod. is a procedure aimed at changing some identifiable, maladaptive organizational behavior. The focus here is thus on empirical studies utilizing behavioral principles as a means of enhancing organizational effectiveness. However, the reader should be aware of the far-reaching impact "operant theory" has had on organizations. For example, Management By Objectives (MBO) parallels the concept of "shaping" as a method of management (Drucker, 1954) as does goal-setting (Locke et al., 1981). Luthans and White (1971) specifically brought out this application of operant theory in MBO. Others have also noticed similarities between MBO and O.B. Mod. (Murray, 1973).

Behavior mod. has also been widely accepted within training paradigms. The methodology employed and the purpose of the "training" has been in a socially-acceptable, contextually-appropriate manner (i.e., an "educational," job-related framework). Programmed instruction (PI) techniques can be found at the Zenith Corporation (for teaching electronics to quality control personnel); AT&T (to train repair clerks); IBM (to train computer programmers); DuPont Labs (to train plant personnel in relevant organizational areas); Maytag (to teach electronics); Pfizer Labs (to educate salesmen about products they are to sell to physicians); and Humble Oil (to teach basic service-station skills) (Rummler, 1967; Ofiesh, 1965; Babb & Kopp, 1978). The essence of PI is to reinforce successive approximations of that which you are trying to teach the incumbent (a knowledge (K), skill (S), or perhaps ability (A)). The learner is "shaped." He/she is "controlled" by the trainer (organization), by

the use of reinforcement (operant theory), in order to allow acquisition of "mutually-beneficial" K,S,A's.

Operant principles have also been widely applied within industrial training programs. Behavior modeling and shaping are typical of the methods used by training programs (Latham & Saari, 1979; Goldstein & Sorcher, 1974). Although widely accepted by organizations, McGhee and Tullar (1978), after an extensive review of the behavior mod. training area, concluded that the scientific evaluation of behavioral methods in training managers has been notoriously low in internal validity. They added that the empirical work on behavior modeling as a tool for training in industry, "contains no clear cut evidence for its effectiveness" (p. 477). Yet, these "operant" guidelines (MBO, goal-setting, feedback, knowledge of results) persist in managing and training workers (McCormick & Ilgen, 1980).

The accepted industry-wide use of PI and reinforcement theory in general is rather paradoxical since the application of O.B. Mod. as an intervention strategy has become a social issue (Babb & Kopp, 1978; Wexley & Nemeroff, 1975). Such sensitivity has been the result of the social, philosophical and practical implications of the development of a "behavioral technology" (Whyte, 1972; Statland & Cannon, 1972; McCall, 1972; Argyris, 1971). These "softer" versions of operant principles have somehow escaped from the line of fire. Ethical concerns about "controlling" the behavior of individuals have overshadowed O.B. Mod. wherever and whenever it has been applied (Waird, 1972; Bandura, 1969; Babb & Kopp, 1978).

From an experimental point of view, Campbell and Pritchard (1976) in the Handbook of Industrial/Organizational Psychology lamented the "lack of systematic concern for the Skinnerian or pure reinforcement view" (p. 121) for motivating employees. At the same time they expressed great concern for the ethical considerations in using behavior techniques; "... the potential of the Skinnerian approach, for good or evil is awesome" (p. 122, emphasis added).

Staw's Annual Review article (1984) pointed out "... behavior modification techniques [have] been ... successful in changing behavior," (p. 648). He continued to note however that misapplication may produce dysfunctional organizational behaviors and that the problem of identifying "good" or "correct" behavior in organizations brings with it operational problems (for example, tasks in the managerial context) as well as ethical questions of manipulation.

This paper does not ignore the importance of such concern. However, the application of operant theory to industry and "morality" need not be mutually exclusive. We will see that the fault lies not in behavioral philosophy but in behavioral methodology. Reviews of the O.B. Mod. literature have emphasized ethical concerns (Schneier, 1974).

> The growing body of research demonstrating the usefulness of behavioral techniques in controlling many problems found in organizational settings has been instrumental in developing an applied behavior

> analysis. Yet there are still many problems (theoretical, ethical, conceptual, and metaphysical) connected with the use and application of behavior modification in organizations (Babb & Kopp, 1978; p. 282).

Attention to more recent research has compounded O.B. Mod.'s problems. "While many early debates centered on ethical questions of manipulation, more recent attention has focused on the unintended consequences of motivation techniques" (Staw, 1984, p. 648). The future of operant theory in industry is better served by focusing on its methodology since it is this that has been offensive and this which has produced "unintended consequences."

O.B. Mod. is the manipulation of external stimuli as a means of modifying work behavior. It is the clarification to the employee of what exactly the contingencies are in the work environment. Some have argued that this will inevitably lead to reduced role ambiguity (Elliott & Geller, 1980) and a consequence of this will be reduced tension, increased job satisfaction and increased performance effectiveness (Katz & Kahn, 1978).

Cherrington et al. (1971) emphasized the role of reinforcement in developing satisfaction. Investigating the relationship between performance and satisfaction, they found "that monetary reinforcers have significant effects on self-reports of satisfaction and that type and magnitude of the relationship between satisfaction and performance

depends primarily upon the performance-reinforcer contingencies that have been arranged" (p. 535). While such potential is favorable, O.B. Mod. must first establish itself as a bona-fide technique, free from ethical, empirical and practical worries.

Maintaining an appreciation for the empirical, methodological and ethical issues surrounding applied behavior mod., the literature herein reviewed serves to support the rationale for an applied behavior mod. experiment which has implications for overcoming many of the limitations of its predecessors.

B. Observable Work Behavior

Behavior mod. in industry has received relatively little empirical investigation (Elliott & Geller, 1980). Those studies that can be found have notoriously neglected the makings of an internally-valid research design. Studies have used inadequately designed quasi-experimentation as a means of investigating the efficacy of behavior mod. in industry (out of necessity) and consequently this has made interpretation of results a difficult task.

Worker output may be more a function of the equipment used rather than contingencies at work. Luthans and Kreitner (1975) warned that any behavioral intervention should first consider this possibility when determining the cause of a problem. Gamboa (1974) specifically discussed the importance of such a step when determining whether behavior mod. should be applied. He pointed out that not only must we

consider the role of equipment/process problems but we must also consider whether the financial cost of installing a behavioral paradigm will be a wise business decision.

Management has evidently felt at times that in fact behavior mod. was the solution to its woes, costs considered. Interest in producing results (changing maladaptive behavior) has guided the interventionist -perhaps in the wrong direction. For although empirical investigations have undoubtedly indicated that behavioral intervention has worked (Babb & Kopp, 1978: Elliott & Geller, 1980), exactly why such intervention has worked is unfortunately not answerable by the research designs typically used.

A publicized example of behavior modification in industry occurred at Emery Air Freight, a shipping company (American Management Association, 1973). Management was concerned with workers' use of freight containers. When these containers were not filled to capacity, the company lost profit. Workers were asked (both dock workers and managers) if containers were being utilized as extensively as possible. (Warehousemen who loaded the containers had been trained for the task of filling the containers and most employees were aware of such training). Workers reported that containers were 90% full, most of the time. A five man performance-audit team did not agree with this estimate. In fact, the audit revealed that container utilization was more objectively estimated at 45% full and not 90% full "most" of the time (criteria regarding time measurement were not reported).

By using a combination of self-feedback and positive reinforcement, Emery was able to increase container utilization. The performance audit provided the identification of a key performance-related behavior (which was undesirable) and provided data on its frequency. Management then established realistic output goals, (there is no mention of any criteria for determining what "realistic" would be). Workers were given "knowledge of their results" (feedback) through self-recording. Finally, it is suggested that increases in performance were systematically strengthened through the use of contingent positive reinforcement. However, the exact nature of these rewards, how delivered, when or in what quantities is unclear from the study.

Management explained their success nonetheless:

> In those areas in which Emery uses positive reinforcement as a motivational tool, nothing is left to chance. Each manager received two elaborate programmed instruction workbooks prepared in-house and geared to the specific work situation at Emery. One deals with recognition and rewards, the workbook enumerates no less than 150 kinds, ranging from a smile and a nod of encouragement, to 'let me buy you a coffee,' to detailed praise for a job well done (American Management Association, 1973, p. 47).

In essence, workers were immediately aware of their job performance (self-feedback recording) and were "shaped" by receiving positive reinforcement (from subtle gestures to elaborate postive performance appraisals) for successive approximations of a target behavior (container utilization). Workers were thus aware of the contingencies upon them (self-feedback-reinforcement relationship) and responded in a fashion consistent with operant theory.

Edward J. Feeney, then vice-president of Emery became excited over behavior mod.'s implication. "I have yet to see any performance area that can function effectively without an effective feedback system and a program of consequences - positive consequences - for the right behaviors" (American Management Association, 1973).

The results of this behavioral intervention increased container utilization from 45% to 95% full "most" of the time. The company saved $650,000 in the first year of its use. Its continued effect has been estimated as a savings of several million (Luthans & Kreitner, 1975). Feeney's euphoria is understandable; "Our end is improved performance and we've been damn effective in getting it!" (American Management Association, 1973).

Unfortunately, however, Emery has not been able to account for exactly what produced their results. Like most behavior mod. interventions, baseline measures were first taken, then an intervention period begins. Depending upon the researcher, a "reversal" (removal of the intervention) may or may not take place to

help rule out the effects of "history" or "trends" (see Campbell & Stanley, 1963).

Understandably, Feeney was not hasty in removing the behavioral program. In fact, it has not been removed at all but only extended into other positions (e.g. sales) within the company. Results in this regard were not provided. The research design was thus a within-subjects AB design (A baseline; B intervention). It is very possible that some other event is responsible for the data (e.g., economic decline had motivated workers to perform better at work, fearing lay-offs, i.e. history effects). "Maturational" trends (perhaps improvement resulted from more experience gained on the job), statistical regression (workers were selected because of their extremely low performance audit) and reactivity ("on-stage" effects), are serious threats to internal validity (see Stern, 1979; Sellitz et al., 1981; Campbell & Stanley, 1963). The AB research design does not allow the experimenter to rule out the possibility that the hypothesized causal relationship is spurious. Problems of internal validity will become a repeated theme throughout this review as a result of reliance upon inadequate research designs.

Elliott and Geller (1980) criticized Emery's evaluative "results" because we do not know exactly what social reinforcements were used nor do we know the amount of time the intervention was in place before results were recorded. The procedures in this study were not clear. The operational definitions and exact methodology employed have not been reported. They also added that with what little information is

known about the study's methods, one cannot ascertain its cost-effectiveness. While the former criticism is true, it is hard to imagine that savings in the two-to-three million dollar range did not more-than-offset the costs of the program.

In another study performed at a shipping company, feedback and reward were combined in order to reduce "turnaround" time of deliveries (time it takes to unload a truck and leave for the next destination) (Runnion et al., 1978). Baseline data were collected and subsequent intervention revealed that indeed turnaround time decreased (from 67 minutes to 38.3 minutes). The AB design makes interpretation highly susceptible to internal threats (Campbell & Stanley, 1963). Moreover, we cannot be sure what reinforcement(s) are responsible for the results. Feedback (knowledge of the results), notoriety (photograph "deliverer of the month"), or their combination could explain the results. Management was not concerned over this lack of internal validity since the business result was improved "turnaround".

Sales companies have also applied operant technology with aims of evaluating its effectiveness. Miller (1977) (also cited in Babb & Kopp, 1978) wanted to investigate the effects of bonuses on the behavior of salespersons. The bonus was annual and therefore a token economy was used so that reinforcement could be delivered immediately (contiguously). "Points" were thus accumulated over the year and were traded-in for a proportionately sized bonus (reinforcement contingent upon behavior).

Salespersons were reinforced for various job behaviors. These were: number of new customers attracted, number of reports completed, degree of accuracy in forecasting sales and a "salesperson-specific" behavior. This salesperson-specific behavior was determined by the supervisor and reflected an area judged by the supervisor to need improvement.

Both manager and salesperson jointly agreed upon goals for each performance category (not dissimilar to MBO or goal-setting) each month. The success of the program was typified by an increase in sales volume of 117.1%. Other behavior increased less dramatically (for example, forecast accuracy rose 39%).

Miller's study utilized the AB design. There are thus numerous threats to internal validity. Elliott and Geller (1980) reviewed the study. They noted that the study was unique for utilizing "joint" objectives (i.e., MBO, goal-setting), and that the intervention was "easily administered" and did not require a large investment of time.

Sales volume has also been increased by reinforcing behavior that was deemed to increase sales (Komacki et al., 1977). Target behaviors were thereby defined as: being in the store, approaching customers when they entered the store and keeping the stockroom shelved up to at least a 60% capacity. Two salespersons participated in the study.

In order to receive a reward, at least one of the two salespersons had to behave in the desired manner at least 90% of the time. The

salespersons were rewarded differently for meeting each target behavior. "Being in the store" and "stocking shelves" was reinforced by allowing each salesperson one hour off with pay. "Approaching customers" was rewarded with two hours off with pay, and a half day off with pay was given for meeting all three behavioral goals. Baseline measures were compared to the intervention period. Being in the store, approaching customers and stocking shelves increased in frequency. The percentage increase for each behavior respectively, was 53 to 57, 35 to 87, and 57 to 86. Although the study was designed to increase "sales volume," through these target behaviors, no data in this regard were provided.

A textile factory used operant theory to increase the quantity of production (Babb & Kopp, 1978). Management wanted to increase the number of "splices and bobbins" (a manual task), from an average of 246 to 300 per operator per day. (This would allow management to save on overtime it had to pay in order to keep up production levels.)

In order to do this, operators were informed of their current rate (performance appraisal) and discussed "graphs" indicating their performance rate compared to the organizational goal. Supervisors were "encouraged" to praise the worker for any improvement.

The results of this study were not impressive. Individual feedback led to a 7.0% increase (to 266 units). Due to the lack of controls, we have no way of knowing whether this small increase (statistical significance was not reported) was due to the

"intervention" (which is presumably, one of reinforcement through "praise"); or was a result of knowledge of performance (feedback) or merely a reaction to the attention paid to workers (i.e., Hawthorne effect). Also, no information regarding the influence of production norms or the method of compensation was presented.

Pierce and Risley (1974) wanted to increase the quantity of production by increasing the number of tasks the worker performed. Subjects consisted of seven 14-to-16 year old workers at a recreation center. They were issued a description of their jobs and at this time "observers" reported that only 50-75% of the described duties were actually being performed by workers.

At this time, the Director "threatened" to fire any employee that did not "improve" (no specific behavioral objectives were established). At first, the number of tasks completed increased but within three days, these levels dropped to baseline.

The Director then decided to reward workers for completing tasks through pay. The number of tasks completed for all employees rose 100%. A baseline period followed this (removal of intervention) for four days. The number of tasks dropped to 35%. Following this, the Director reinstated the "pay" motivator and behaviors again rose to previous levels.

The study demonstrated the ease with which reinforcement can effect work behavior. Unfortunately, the study lasted only 25 days.

Contingencies were in effect for only 11 of these days. It is hard to base conclusions on the long-term efficacy of such a program. What is worth noting however, was the notion of rewarding the "number" of tasks completed as a means of producing short-term changes. Conclusions however must be guarded. The "multiple-baseline" design (Kazdin, 1978) used (in this study it was a variant of what Cook and Campbell (1979) considers an "interrupted-time-series-with-switching-replications") helps rule out "history" although other threats to internal validity remain alive (for example, results may have been due to subjects' comparison of the punishment treatment to the reinforcement treatment alone; see Campbell and Stanley, 1963; multiple treatments).

Lamal and Benfield (1978) wanted to increase the amount of time a single engineer spent working. Management was upset with his low work output and subsequent to "observation," attributed his low output to the small amount of time he spent actually drafting. A "target" behavior was therefore established. Elliott and Geller (1980) described the study.

Following a baseline period where a head draftsman recorded the work behavior of a problem engineer, this engineer was asked to record his time of arrival in the morning, the time he left for and returned from lunch, and the time of departure for home at the end of the work day. The amount of time the engineer spent at his desk drawing or discussing job specifications with other employees was also recorded. Agreement between raters (the target engineer and head draftsman) was

reportedly 100% (i.e., the target engineer's work behavior was undesirable).

The act of merely recording the engineer's behavior led to changes. The "reactive" effect (Webb et al., 1966) of this measurement procedure significantly reduced an undesirable work behavior. The engineer's arrival to work went from 10:15 am to an average of 8:15 am. Obtrusive measurement lasted five days and did not affect any other behavior. Subsequent to this, "obtrusive" measurement recorded the amount of time the "target" engineer spent "not working at all." This "intervention" recorded improvement in time spent working from a baseline of 50.5% to 84.6%. Eleven weeks later (after removal of "measurement") no decrease in the amount of time spent working was found.

Elliott and Geller (1980) found various interpretations for the findings. The behavioral investigators argued that the effects gained were a result of the worker's "internal anticipatory consequences" (afraid of being punished) and not merely a result of external "monitoring" (one can easily argue that it was anticipation of rewards that functioned as the internal mechanism). Be that as it may, the important point here is that indeed "monitoring" alone and no other planned intervention strategy was necessary (i.e., the deliverance of external consequences) for changing work behavior. The different interpretations, are of course, critical in terms of implications for practice.

Textile industries have capitalized on operant theory in order to increase the "quality" of production. Elliott and Geller (1980) described behavioral work in these industries. Poor work quality in a textile factory was attributed to the workers reluctance to push a bobbin "all the way down" before starting to spin yarn. The result of these "high bobbins" were tangled yarn, materials wasted, man hours wasted, and generally reduced plant efficiency (McCarthy, 1978). This undesirable behavior was targeted for change.

The study combined features of shaping, information feedback, and positive reinforcement in its "intervention" period. Following a baseline period, workers received feedback on how they "compared" (via a graph) to the "target" goal. The first 15 days of treatment defined target behavior as 12 "high bobbins" per day (i.e., errors). During this time a "publicly posted" chart compared the group's daily performance to the target behavior. This allowed workers to comprehend succinctly the contingency between their behavior and reward (praise).

The next "intervention period" (14 days) rewarded behavior that approximated the goal (which was zero high bobbins) even closer and finally the "third period" rewarded behavior for zero high bobbins only. The number of high bobbins never did reach zero. An eleven day reversal period increased the incidence of high bobbins but the reinstatement of feedback and praise again reduced its occurrence.

Elliott and Geller (1980) criticized these efforts. First, the reversal phase was not continued long enough to allow the frequency of the target behavior to approach pre-treatment levels. This would have supported the efficacy of the intervention. Secondly, the "interventions" were over-lapped so that interpretation of the results is difficult. The confound of "multiple treatments" does not allow evaluation of a specific behavior intervention. In addition, no reactive comparison was made. Elliott andd Geller (1980) suggested that a multiple-baseline procedure could have provided less ambiguous results.

McCarthy's study was used as an example by Elliott and Geller (1980) to instruct future O.B. Modifiers. They explained that large changes in work behavior are best attained systematically through the process of "shaping." This allows the reinforcement of gradual behavioral changes (which are more likely to be emitted) rather than waiting for the "target" behavior to occur. Whenever "perfection" is being demanded (zero high bobbins) the researcher should be careful not to make unreasonable or unrealistic goals. (McCarthy attempted to drop a baseline average of 55.9 high bobbins to zero in less than 45 days!)

Finally, Elliott and Geller (1980) mentioned that future behavior modifiers may be more successful if, instead of setting contingencies upon poor performance, contingencies are focused on positive (desirable) behavior (i.e., deliver reinforcement for bobbins attached correctly rather than reinforce for decreasing poorly attached

bobbins). The efficacy of rewarding desirable behavior (and not the rewarding of decreasing incidents of undesirable behavior) as a means to a goal is well-supported by other behavioral interventions (Redd et al., 1979; Lovaas and Bucher, 1974; Bandura, 1969).

Adam and Scott (1971) wanted to know if contingencies could influence the "quantity" and "quality" of output and employed a laboratory simulation experiment to test this. College undergraduates were asked to remove punched computer cards that were in error from among a stack. They were explicitly told to make as few errors as possible.

The experimenter placed different contingencies on two groups performing this task. Contingencies were placed on each of the two groups (N=40). One group was punished for errors more severely than they were for the quantity of output. The other group experienced the same contingency for 90 minutes but then their contingency was "switched." That is, they were penalized more severely for a low quantity of output than for errors made (for 90 mintues).

This switch had no effect on quantity or quality of output. The performance of the two groups did not differ significantly at any time. Elliott and Geller (1980) offered an interpretation that the quality of output cannot be effectively controlled through contingencies. Another interpretation however revolves around the fact that the students were not explicitly told about the switch in

contingencies, (that they could earn more by producing alot, rather than wasting time on being accurate).

Elliott and Geller (1980) issued a caveat to the user of behavior mod. in the industrial setting. In rewarding a "target" behavior, the experimenter must be careful not to affect other work behaviors. It is not unreasonable to expect that workers may neglect tasks that need to be performed in order to maximize their "bonuses" on the "target" task. They, therefore, suggested that other work behaviors (not directly involved in the behavioral intervention) be monitored to ensure management that they are not being adversely affected. They also urged management to always consider how it will deal with its increased productivity. If it is used to reduce costs by "eliminating" workers, it is likely that output may become severely restricted.

Management must proactively plan for the effects of productivity changes. This plan should not, however, include altering the behavior mod. program once initiated unless workers have agreed in advance that a change is desirable. Changes in the contingencies without approval from the players could result in chaos (Porter & Steers, 1973). Lawler (1971) has shown that sudden modifications in managerial programs have led to failure in many merit plans. Foa and Emmelkamp (1983) recently dedicated a text to behavior mod. applications that have met failure due to "poor" methodology (primarily in the clinical setting).

Employees have not been the sole target of behavioral methods. Although we are now required to purchase "returnable" bottles, this behavior, in 1971 was voluntary. Geller et al., (1971) at that time decided to demonstrate the impact reinforcement can have on "bottle-buying" behavior. By using social reinforcers (e.g., praise, recognition, pride) he hoped to decrease the frequency of purchasing non-returnable bottles in a grocery store. Returnable-bottle purchasing behavior was made contingent upon receiving reinforcement.

Geller et al., (1971) "prompted" performance of the desired response by circulating ads aimed at purchasing returnable bottles. If a customer purchased a returnable bottle, social reinforcement was delivered.

This contingency was put into place in three grocery stores. Results showed that the percentage of returnable bottle sales increased from baseline in all stores; increases were recorded of 32%, 13% and 3% over baseline. Geller et al. explained post hoc that these obtained differences between stores resulted from differential time intervals in presenting reinforcement contingent upon the desired behavior. Indeed long temporal intervals between a behavior and its consequence will not facilitate conditioning (see Tarpy, 1975, p. 54).

Removal of the contingency (reversal phase) generally decreased returnable sales but not to baseline levels (20%, 5% and 2%), as would be expected. Perhaps a longer extinction interval would have allowed the behavior to return to baseline (data were recorded for only 2

weeks). However, another explanation lies within the study's methods. While at first glance it seems obvious that "social rewards" were responsible for the increase in returnable-bottle sales, the intervention was confounded with the distribution of "prompting" ads. Not only does this complicate interpretation but it also offers an explanation for the failure of the return rate to return to baseline. It is probable that "prompting ads" were still haphazardly located throughout the store subsequent to intervention and this prevented behavior from returning to baseline levels.

Anderson et al. (1982) demonstrated the effects of behavioral management on the client-contacting behavior of real-estate salespersons. The experimenters attempted to improve the frequency of contacts made by brokers with "prospective" and "established" clients.

A 20-week baseline period measured the frequency of contacts with clients. This baseline data was provided by the salespersons themselves. A 15-week intervention followed where token reinforcement was provided for contact behavior. A significant rise in contact behaviors was demonstrated.

A mutiple-baseline design in which two intervention components (feedback and feedback-plus-praise) was applied across 7 departments of a furniture manufacturing plant in order to increase the performance of 7 job behaviors (Wikoff et al., 1982). Each department recorded their daily average worker efficiency "score" for their respective behaviors which consisted of "punch-press" (metal parts

must be bent), welding, polishing/buffing, plating, mainline (parts are painted here), upholstery, and fiberglass molding. Each department was introduced to the behavior mod. contingencies on a staggered schedule (i.e., history-control).

The results suggested that both feedback only and feedback-plus-praise increased worker efficiency in each department. Comparatively, however, the feedback-plus-praise condition increased efficiency over and above the feedback alone condition for 5 work behaviors, (the fiberglass and upholstery behaviors did not respond significantly more favorably to the feedback-plus-praise condition; the researchers did not resist reporting a tendency for this data to approach significance). The study is notable for its staggered multiple-baseline across departments in which it compared the effects of two treatment conditions. Although no control for reactivity was included, the significant difference between the two types of interventions suggests that more than reactivity is involved.

C. Improving Punctuality

Organizations have suffered from their workforce's absence and tardiness (Bureau of National Affairs, 1974, Work in America, 1973; Muchinsky, 1979). Behavior mod. has offered relief. The use of contingencies to increase punctual behavior has met with success. Nord (1971) was among the first to design an O.B. Mod. program around a "lottery" system to increase punctual behavior. This was to serve as a model for many programs to come.

Employees at a hardware company were demonstrating excessive absenteeism. A lottery was established whereby any employee that arrived on-time (not late) for work during a whole monthly period would become eligible for a "drawing." (This would obviously affect tardiness as well.) A cash prize was awarded to one out of every 25 workers. The prize ranged from $25 to $30.

In addition, another lottery system was established in order to reinforce long-term desirable behavior. A worker could become eligible for a "grand" prize drawing if he/she had perfect attendance for six months. (Evidently, Nord felt that greater efforts would demand greater rewards; borrowing from the "internal" theorist, e.g., Lawler and Suttle's model, 1973.)

The lotteries proved quite effective. There was a 62% reduction in sick leave costs, and the number of workers wanting to participate rose from 29% at the start to 41% after 18 months.

Nord (1971) found similar success using teachers as subjects in a "lottery" system. ("Pop" articles have admired and publicized the efficacy of the lottery system, see "Where Skinner's Theories Work," 1972). Nord's (1971) study is of significant value, not for its experimental elegance, (in fact no baseline data were reported), but for its acknowledgement of some potential problems that not only arose during the study but could arise during any application of operant principles to industry. Elliott and Geller (1980) reported these problems.

The contingency used by Nord demanded perfect attendance by teachers for the whole semester. This contingency "upset" the teacher's union. The union charged that the demands were too stringent and that the program was resulting in teachers coming to work when they were ill.

Another problem emanated from the workers themselves. It seems that the "participants" of the program were not well-defined prior to implementation. The result was that some "ineligible" employees were not aware of their status. One can imagine the hostility that developed toward the program when workers who considered themselves "eligible" for a drawing were subsequently denied.

Elliott and Geller (1980) pointed out that whenever an O.B. Mod. program is installed, one should make certain that contingencies are not "too stringent" and that workers should be fully informed as to their eligibility and participation in the program.

Chronically-tardy employees were identified at a Mexican company. Elliott and Geller (1980) described the research and gave credit to Herman et al. (1973) for attempting a well-controlled O.B. Mod. study to reduce tardiness. One hundred thirty-one employees at this company had accumulated 750 tardies in a period of one year. Workers who had over 10 tardies per year were eligible for participation. From this group, 12 workers were randomly selected for participation in the study and assigned to the treatment.

Six subjects served in a no-treatment control. The treatment group was put on a "token" economy. A slip of paper was given to the worker each day provided he/she was not tardy (or absent). The "tokens" were redeemable for cash, each worth about $.15.

The experimental group incorporated a variant of the ABA design into its treatment. Following a 12 week baseline period, the contingency was put into effect for eight weeks. This was followed by a reversal phase lasting 4 weeks and then again the contingency was reinstated for 9 weeks. A reversal phase followed this for 12 weeks and then the contingency was again in effect for 32 weeks (A-12 wks., B-8wks., A-4 wks., B-9wks., A-12 wks., B-32wks.).

Tardiness frequencies were, for each phase respectively 15%, 2.5%, 8%, 1.8%, 6.5%, and 2%. (At no time did tardiness exceed 2.5% when the contingency was in effect.) Tardiness showed a systematic decrease during contingencies and opposite trends upon removal. It is interesting to note that workers in the control did not maintain their pre-experimental tardiness rate. Instead, the control group increased their rate to 26%.

It is possible that this rise (in the controls) would have occurred in the absence of experimental intervention. It is also possible, however, that the workers in the control group "found out" about the cash incentives they were missing. Again researchers must be careful when attempting to use control groups. Differential treatments may not only cause short-term behavioral differences but

may possibly affect longer-term affective responses to the job and perhaps the contingencies in effect.

Elliott and Gelier (1980) addressed the experimental need to include reactive comparison groups. They maintained that the results were ambiguous since Herman et al. failed to control for reactivity. Workers in the no-treatment control received no more special attention than was typically given them in the normal course of a work day.

The treatment group however, experienced not only the cash incentive but also the "opportunity to participate in an experiment" which was quite extraordinary for them. We cannot, by comparing groups, eliminate the effect of "participation" from the experimental group (Elliott & Geller, 1980). What the effect of obtrusively measuring the control group's behavior (so that they know they are participating) would be on tardiness behavior is unknown.

Herman et al.'s (1973) study mentioned an often over-looked limitation of any incentive-program aimed at reinforcing "punctuality" (as did Elliott and Geller, 1980). These programs are aimed at increasing the frequency of the worker's being punctual. Only "punctuality" is required for the reward. Studies aimed at reducing absenteeism do not reinforce (or even measure for that matter) the amount of time the worker spends actually working. While O.B. Mod. may be capable of physically placing someone on-the-job, there is no guarantee that increases in work performance must necessarily follow.

Orpen (1978) used a token economy to reduce absenteeism among 46 textile workers in South Africa. An ABAB design was used. Rewarding workers with tokens for punctuality reduced a baseline rate of 3.94% to 2.56%. Upon reversal the rate rose to 3.74% and upon reinstatement fell to 2.01%. The difference between baseline and treatment rates were reportedly statistically significant; however, their practical significance is questionable. In addition, the nature of the design, (Cook and Campbell's 1979 interrupted-time-series-with multiple replications), rules out history confounds but reactivity remains an internal threat (i.e., any intervention or participative-program may have affected behavior in the observed manner).

Perhaps one of the "best known" attempts at reducing absenteeism was designed by Pedalino and Gamboa (1974). These investigators used a "poker-game" strategy (5 card stud) to investigate the ability of a reinforcer to increase punctuality.

Workers (N=215) were allowed to select a card from a standard playing deck each day they arrived for work on time. Each worker's "hand" was posted for all to see. At the end of a 5-day work week, the worker with the best poker hand was awarded $20.

The baseline absenteeism rate was 3.01%. This dropped to 2.30% upon introduction of the "weekly" poker-playing condition. Intermittent intervention (poker played every other week) led to a small (non-significant) increase, 2.51%. Removal of the intervention returned absenteeism to pre-experimental levels (3.02%).

The design itself, to repeat a theme, raises ambiguity about interpretation of results. Although history can be ruled out, no control for reactive effects due to measurement was used.

While practical considerations make "perfect" design a difficult task (since management is simply anxious to reduce behavior using "whatever" seems to work), Pedalino and Gamboa may have made some conceptual and methodological errors. That is, problems that could (and did) arise concerning the nature of the reinforcer were not anticipated.

Specifically, the researchers used a playing card to reinforce arrival to work on time. Optimistically, this may take place. However, for those of us who have indulged in life's temptations, it is perhaps all too clear that ownership of a poker playing card is not always a "gratifying" experience. Furthermore, the reinforcing potential of receiving a playing card on Friday for arriving on-time could be nullified by a co-worker having received an ace on Monday and an ace on Tuesday. One possible solution to such a problem would be to offer prizes contingent upon the levels of poker-hands regardless of who would actually win (Lefkowitz, personal communication, 1986).

In sum, the allegedly reinforcing stimulus (playing card) may have acted as either a "punisher" or "reinforcer" depending upon the "draw." Moreover, whether behavior would actually be reinforced by the token at the end of the work week was not solely determined by the

exhibition of organizationally-desirable behavior but rather also depended upon "how the chips fell" that is; how one's poker hand compared to the luck of fellow co-workers. Indeed, mere participation in the game could possibly be effectively rewarding, regardless of the draw.

Pedalino and Gamboa also ran into some procedural difficulties with the worker's union. The study was terminated sooner than planned since a bargaining date between the union and the company was arriving and the company "did not want to find itself negotiating the incentive system into contracts" (p. 698). Elliott and Geller (1980) reported that other researchers (Kempen & Hall, 1977) have emphasized the "difficult and risky" nature of using monetary reinforcers for union workers. Elliott and Geller (1980) reviewed the Kempen and Hall study which we turn to now.

Workers in two communications-equipment manufacturing plants served as subjects (N=8000). The two plants were put under similar contingency programs. Baseline measures were taken in Plant A over a 34-month period. This baseline-period however was confounded by a "disciplinary program" (with aversive consequences) that was on-going as the study was begun. Elliott and Geller (1980) refused, therefore, to accept this data as a no-treatment baseline measure.

The intervention period was characteristically a "mixture" of reinforcement and punishment. Workers were "reprimanded" for each absence beyond seven in one year or a total of 40 absent days in the

current plus previous three years. The reinforcement part of intervention could have taken one of three modes. Contingent upon arrival to work on time, the worker could be given "freedom" from punching the time clock, days off with pay, or removal of the punishment contingency.

Plant B provided baseline data for the first 42 months of its participation. Again, however, this baseline measure was confounded by two ineffective programs that were instituted to control absenteeism. The baseline data is thus ambiguous.

Workers in Plant B experienced the following contingencies. If a worker was absent for 8 days, a "reprimand" was given. Offenses above this criterion were handled by placing the worker on "official" probation.

Freedom from punching the time clock could be earned by having zero absences in a 13-week period, 2 or less absences in a 26-week period, or 3 or less absences in a 52-week period. Elliott and Geller (1980) noted that workers in Plant B had an easier means of earning free-time (a worker could earn a day off for having no absences in a 13-week period and also could earn a "bonus" day if perfect attendance for a full year was exhibited).

The results indicated that the contingency programs reduced absenteeism in both plants. The mean baseline rate of Plant A was 5%. Subsequent to the intervention this dropped to 3.4%. Plant B's

mean baseline rate of 14% dropped to 6.7% upon introduction of the contingencies. Residual "trends" within each plant threaten the interpreted efficacy of each program (absenteeism may have been slowly declining from "residual" effects to the "ineffective" programs management introduced before this study). The lack of a reversal phase or a control group for reactivity adds to the ambiguity of the results.

A significant feature of this study is revealed in its use of various "types" of reinforcers. Research has indicated that various work features are "preferred" differently by workers. The consideration of relative preferences takes advantage of the fact that one worker would rather earn a "day-off" while a co-worker would prefer "freedom" from punching a clock. The experimenter can "be certain" of maximally rewarding each worker by using a reinforcement "menu." Nealy (1964) and Jurgensen (1978) have provided empirical evidence for differential preferences for work rewards.

Elliott and Geller (1980) criticized the results. Merit was given for the inclusion of non-monetary reinforcers, a novel approach in empirical investigations. However, they were disappointed in the ambiguity of the design.

First, it is uncertain whether a within-groups or between-groups design best describes the study. Secondly, the means of the two plants are not comparable (the performance means of Plant A were adjusted for turnover, Plant B was not), and most significantly "there

is no way to separate the effects of the punishment contingency from that of the reinforcer contingency." Confounding variables within this study rendered interpretation a very difficult task.

D. Schedules of Reinforcement Applied

Workers have been placed under various schedules of reinforcement in order to change their work behavior. These empirical investigations have also relied on extrinsic reinforcers and have found worker characteristics to play an important role in determining the success of a reinforcement contingency. An archival study by Weisberg and Waldrop (1972) demonstrated that an FI schedule (where adjournment was the reinforcer) affected the behavior (number of bills passed) of congress persons in the 80th, 81st, 82nd, and 83rd congressional sessions, in much the same way as it would the rat or the pigeon. That is, the frequency of behavior increased as delivery of reinforcement grew near and then leveled off subsequent to reinforcement again increasing as delivery grew near again. (This would appear as a "scalloped" effect when the cumulative frequency of behavior is graphed).

Yukl et al. (1972) employed "workers" from a university placement office (i.e., college students paid for participation). These workers were given the task of scoring IBM answer cards from an introductory psychology course. All workers received $1.50 an hour for their employment. After one week, however, the subjects' pay-scale was increased. Some workers were placed on a VR-2 schedule, receiving

$.50 as the reward. Depending on the flip of a coin these workers would receive the additional pay for each "batch" of cards completed.

Another group was placed on a VR-2 schedule but received $.25 as a reward. Depending upon the flip of a coin, they received the additional $.25. Finally, a third group was placed on a CRF schedule. This group thus received an additional $.25 for every batch of cards completed.

Following one week on their respective schedules, differences between quantity and quality of work output were assessed. No significant differences were found between groups on the number of errors made. Quantitative differences however, were significant.

Workers who received $.50 on the VR-2 schedule had higher productivity than workers on the $.25 VR-2 schedule or the $.25 CRF. Apparently, the choice of the amount of the reward is important. No significant difference was reported between the $.25 CRF group or the $.25 VR-2 group. (It is interesting to note that Tarpy (1975) explained that the experimental literature has also found that performance improves when the "qualitative nature" of the reinforcer is manipulated, see Goodrich, 1960; Kraeling, 1961). The qualitative manipulation of a reinforcer will become an increasingly important thesis as this paper progresses.)

Yukl et al.'s (1972) study was criticized by Berger et al., (1975). They mentioned that workers were not randomly assigned into

the three conditions; that researchers did not attempt to measure changes in performance across time; and that perhaps the use of coin-flipping (to establish the VR schedule) may have been "intrinsically valent" to the workers, being of a game-like nature.

These reviewers employed their criticisms into a design aimed at investigating the effects of reinforcement schedules (Berger et al., 1975). This time workers were randomly assigned to one of the three treatment groups (VR-2 - $.50; VR-2 - $.25; CRF - $.25). Following a 3-day baseline period these schedules were put into effect. Reinforcement this time, was determined by a slip of paper (i.e., token) present on the back of attitude questionnaires that subjects were required to code into IBM coding sheets. Schedules were in effect for a total of 6 days. Despite these changes, results paralleled Yukl et al.'s findings.

Elliott and Geller (1980) reacted to both of these works and stated that problems with the studies do not allow any conclusions regarding schedules of reinforcement at the workplace. Two major criticisms were launched. First, in reality the experimenters were not investigating simple schedules of reinforcement. The workers were not only treated on a VR or CRF, they simultaneously experienced a "salary." Secondly, it is not reasonable (or probable) to expect companies to manipulate worker's pay in order to affect work behavior. While the laboratory setting may enjoy such control, the external validity of these studies is at best minimal.

Yukl and Latham (1975) used a quasi-experimental design in order to investigate the differential effects of schedules of reinforcement. Thirty-eight forestry workers participated in the study, (no sex distribution was reported). Three treatment conditions (1 CRF; 2 VR's) were randomly assigned to work crews. A geographically isolated crew served as a control.

The three conditions were defined as follows; 1) CRF - workers received a $2 bonus for each bag of trees they planted; 2) VR-2 condition rewarded workers with a $4 bonus contingent upon planting a bag of trees and guessing the outcome of one coin toss; and 3) VR-4 condition rewarded workers with an $8 bonus contingent upon planting a bag of trees and correctly guessing two coin toss outcomes.

Yukl and Latham controlled for the possible influence of hostile or "negative" reactions from workers which could be manifested through work behavior. The instructions to workers emphasized the fact that "If you guess incorrectly, you don't really lose anything because you will always receive your regular hourly pay." Unfortunately, no manipulation check was incorporated in the design to establish if in fact no "undesirable" side effects were taking place, (i.e., bad feelings about the study, feeling "cheated" or "manipulated," etc.).

The study was confounded by numerous other variables, all of which were mentioned by the experimenters. Statistical and experimental controls were maximized to bring together conclusive results where possible. Admittedly, however, the investigators realized that

differences due to "selection" (e.g., leadership, worker characteristics) may have biased their results (Campbell and Stanley, 1963).

The results of the study suggested that productivity was highest when CRF was used. Beyond this, however, the experimenters warned behavior mod. researchers of a possible interaction between the "consequences" chosen and the "personal attributes" of the workforce.

In their study, they noted that several women in the VR-2 condition reacted negatively to the behavior mod. program because they felt that coin-flipping was a form of gambling. (When the experimenters realized this was occurring, they "did their best" to convince these workers that nothing immoral was taking place and that in fact gambling was not taking place because no one was risking their money. However, they realized that "it was not clear to what extent they [the subjects] accepted this explanation.")

The VR-4 condition included a part-time minister who disapproved of the program for the same reason. The minister tried to sabotage the study and was quickly replaced by another supervisor. The impact of the "chaos" created by the well-intentioned minister cannot be assessed, nor can we be certain as to what affect his "removal" from the work crew for "non-compliance," had on other crew members. The study inadvertently finds its forte in calling for research on the "interactive effects" between extrinsic motivators and personal variables.

Also of significance was the realization that the application of schedules of reinforcement to industry will never parallel those of the learning literature. Practical considerations will continually modify the application of a reinforcement schedule. For example, in Yukl and Latham's study, the CRF schedule was actually an FR1000, since there were about 1,000 trees in a bag. The VR-2 and VR-4 schedules can be considered VR2000 and VR4000 schedules, respectively. Ratios such as these may not be "realistic" in producing desired behaviors. Also, it is unlikely to expect to utilize "pure" schedules ever in industry. Moreover, the "appropriateness" of guessing the outcome of irrelevant events (coin toss) to determine delivery of reinforcement in the workplace is neither practical nor realistic and is likely "offensive" to the working population.

Since workers do receive hourly wages, the effectiveness of reinforcement schedules may always be diluted by concurrent fixed interval (salary) schedules. Regarding the "purity" of reinforcement schedules, Yukl and Latham (1975) explained that studies aimed at the application of schedules of reinforcement to industry should not worry about using "mixed" conditions since; "to do otherwise would be impractical to industry" (Yukl & Latham, 1975).

One further study on schedules of reinforcement appears in the literature which offered some empirical support for Yukl and Latham's (1975) inadvertent discovery that "worker characteri cs" may influence the efficacy of a schedule of reinforcement. Latham and

Dossett (1978) used 14 beaver trappers as subjects. Two groups were used; each group experienced a "shift" of reinforcement schedules to see if the new contingencies would effect the number of beavers trapped per hour (i.e., productivity).

Workers received a salary of $5 an hour. The experimenters added to this the opportunity to earn more in various ways. For one group of trappers a bonus of $1 (CRF) was in effect for four weeks. Following this, four weeks of a $4-VR was instated for an additional four weeks. Treatments thus differed in "schedule-nature" as well as the "magnitude" of the reward. Another work crew of trappers received the same treatment only in reverse order, as a control for order/contrast effects. The delivery of reinforcement was decided by the trappers by guessing the color of a marble held by one of the supervisors.

The results of the study indicated that the CRF condition led to higher productivity than the VR condition. Results however can be attributed to either the nature of the schedule or the magnitude of reward (perhaps workers felt that the $4 reward was "inequitable," recall J. Stacey Adams, 1965). In any case, the results were "qualified" by the appearance of a significant interaction. While inexperienced trappers were more productive on the CRF than on the VR, the experienced trappers were more productive on the VR rather than the CRF. This makes sense since learning theory promotes continuous schedules for response acquisition (Tarpy, 1975). The demonstration of a Worker x Schedule interaction has shed a new light on an area

once hypothesized to parallel the strict findings of the animal studies upon which they were based. Future investigations regarding the interactive nature of reinforcing stimuli and worker characteristics are badly needed.

The literature reviewed has indicated that evaluative problems are a common theme of O.B. Mod. research. Problems also emanate from the behavioral intervention's reliance on extrinsic reinforcers. The following section shall address these problems from an empirical, practical, and ethical perspective. Babb and Kopp (1978) were aware of these shortcomings but concluded their review on an optimistic note:

> The few reported successful applications in organizations have been in problem situations which behavior mod. remedied. Behavior mod. has potential as an organization development technique... (Babb & Kopp, 1978, p. 290).

E. Major Criticisms

1. Ethical and Practical Considerations.

Criticisms of O.B. Mod. have been levied from many perspectives. The empirical research has not offered internally valid conclusions. This has primarily resulted from limitations within the applied situation as well as from inadequate scientific concern from the O.B. Modifier.

Comparisons among various methods of behavior mod. have not been systematically investigated. Instead, we have "experiments" which are poorly controlled and have focused on the "token economy" as the means of positively reinforcing behavior. This, perhaps has resulted mainly from the fact that management is often less concerned about "understanding" through scientific methods than it is about making "something" work.

Major criticisms of the O.B. Mod. literature were made by Argyris (1971) and Whyte (1972). Babb and Kopp (1978) summarized their criticisms. Argyris (1971) felt that behavior mod. would never work in the "real" world. He argued that the success that behavior mod. has enjoyed is due to the types of populations to which it has been applied. Subjects used in behavior mod. research are typically students in schools, delinquents in institutions, behaviorally disordered adults and children and institutionalized mental patients. Babb and Kopp (1978) listed four qualities that these populations share. They are 1) dependent upon an other; 2) submissive to a therapist (or other); 3) characterized by short time perspectives; and 4) typically perform only tasks assigned to them.

Argyris (1971) explained that behavior mod. is based on individuals who are constantly controlled by others. Application of behavior mod. to "uncontrolled" settings is therefore futile. That is, workers in organizatons are qualitatively different from individuals living in a contrived environment. Moreover, for behavior mod. to be successful in the business setting, argues Argyris, the

interventionist must assume that uncontrolled "cognitive" events will not materially affect behavior. First, the recipient of the reinforcement must interpret the reinforcement precisely as intended, not adding additional meanings to any given reinforcement. Secondly, the recipient must not discuss the reinforcement program covertly or openly, knowingly or unknowingly, with anyone else.

Babb and Kopp (1978) explained that both Whyte (1972) and Argyris (1971) believe that when one moves from the laboratory (where basic principles of behavior were established) into real, industrial settings, behavior mod. tells very little about prediction and control of behavior.

Whyte (1972) listed four major criticisms in regard to elements of "real life" that behavior mod. has not dealt with. They are:

1. Positive reinforcement is difficult to dispense in work organizations due to practical problems faced in defining and measuring complex behaviors in this setting and due to the comparison process operating when a worker determines his/her satisfaction with reinforcement.

2. Conflicting stimuli are often present in the work situation. A worker's behavior can simultaneously produce a reward from one group and punishment from another.

3. Environmental contingencies are difficult to manage due to time lags between performance and rewards resulting from the often unpredictable behavior of those dispensing rewards and punishment.

4. Contingencies of reinforcement that control the behavior of the persons reinforcing other employees must be considered.

While both Argyris and Whyte contend that behavior mod. can never be applied "successfully" to the work setting for their stated reasons, we have seen that in fact, there is evidence suggesting the possibility that contingencies can be introduced into actual work settings to alter behavior. Whether such studies have pointed towards the success of O.B. Mod. is however, dependent upon one's criteria for success. Empirical investigations of O.B. Mod. have used inadequate quasi-experimental designs, "short-term" intervention strategies, have relied on "simple" (measurable) job behavior criteria and emphasized behavior change to the neglect of affective responses to behavior mod. interventions. Moreover, interactions between personal variables and the nature of the reinforcement system have been largely ignored (i.e., worker characteristics x treatment), (Mawhinney, 1975; Phillips & Freedman, 1985).

Another criticism of the O.B. Mod. area has been labeled a problem of interpretation by Babb and Kopp (1978). Recall that this paper

included a section on the basic principles of learning for just this reason.

> ... terms and concepts commonly used in the operant paradigm rarely appear in the organizational literature. This omission results in conceptual and operational problems in applying operant terms, concepts, and principles (p. 289, emphasis added).

Mawhinney (1975) warned that research on O.B. Mod. must use operant terms and concepts when applicable and "agree" on their respective meanings. Indeed, without a common language, the literature is likely to become nothing but semantic confusion. Organization researchers must use and understand the language of operant psychology if behavior mod. is to find its place in the workforce.

Mawhinney also called for the use of control or comparison groups and between-groups research designs to aid in the interpretive difficulties characteristic of O.B. Mod. research. Babb and Kopp (1978) supported these criticisms and optimistically urged future researchers to "embrace" operant concepts and develop controlled designs so that behavior mod. may be extended properly.

Ethical criticisms have attacked behavior mod. as being dehumanizing, dictatorial, and threatening to personal autonomy. The

application of Skinner's principles to humans has been described as false and inhuman (Waird, 1972).

Behaviorists, however, are quick to point out that humans are constantly being "shaped" by their environment. We are controlled, manipulated, and conditioned by our educational institutions, political persuasions, and religions (Babb & Kopp, 1978; Skinner, 1953 in Luthans & Kreitner, 1975).

Mikulas (1972) and Luthans and White (1971) have addressed some of the controversies surrounding the "control" of individuals. Babb and Kopp (1978) summarized their points. The moral question of the manipulative aspects of behavior mod. must be addressed by society. If science develops procedures for manipulating or controlling individuals, who will have the right to use these procedures? Whom shall we decide upon as the recipient of its effects? In short, who shall be controlled and who shall be the controller?

For what purposes (and for whose purpose) will behavior mod. be used? What agent shall decide what is "maladaptive" and what is "desirable" in the organization (or elsewhere)? Luthans and White (1971) feared that behavior mod.'s goal is to mold an individual into another individual's concept of an "ideal" person. Babb and Kopp (1978) refuted this point stating that no one can shape the "complete" person, nor does anyone care to.

Argyris (1971) has attacked the behavioral notion of reducing an individual to a mere respondent to external contingencies. He insisted that individuals should not be addressed in such a narrow manner. Raising the moral issue of "growth" and "development," he called for the strengthening of an individual's influence, understanding, and control of his/her own environment. Individuals should be sensitized to their impact on others and how they may modify their impact when they desire. Behavior mod. emphasizes "learning" but not in a developmental or growth-oriented manner. This technology is merely a system by which the individual becomes aware of what some agent expects, making the individual dependent on the other for reinforcement. Argyris' "humanistic" perspective has given behavior modifiers much to think about.

O.B. Mod. is by-nature dependent upon extrinsic consequences. The "method" of controlling workers through the use of abnormal or contextually inappropriate stimuli has met with resistance from management, workers, psychologists, philosophers, and society in general. Waird (1972) argued that the basic idea of extrinsically reinforcing performance is tantamount to "bribery" (an "illegitimate" means of changing behavior).

Earlier in this paper (introduction), I put forward the contention that it is not "control" per se, which society rejects; it is "how" one goes about controlling those behaviors that are deemed controllable by social values that meets resistance. When we control others through socially-acceptable modes (educational institutions,

religious institutions, parental "guidance," etc.), no social resistance is met. It is only when a stimulus is perceived as socially inappropriate or "out-of-place" to the natural environment (overtly distinguishable from what "normally" occurs) that its presence gains critical attention.

While workers "ordinarily" work for secondary reinforcers (i.e., paycheck), it is not "normal" for workers to be manipulated by rewards brought in by consultants, or some new "managerial exercise." The "artificiality" of this situation is a "socially-unacceptable" means of altering behavior, albeit for "the good of all." The control of behavior through "normal" channels is accepted while the manipulation of behavior through "abnormal" means is unacceptable. Empirically, we shall see that "normal" or contextually/socially appropriate methods of reinforcing behavior may not only be "better accepted" by society but also advantageous in light of the negative cognitive effects unusual or socially inappropriate contingencies have had on individuals (Deci, 1971, 1972a,b, 1973; Kruglanski, 1975a; Pinder, 1976). Clearly O.B. Mod. must battle its addiction to contextually inappropriate reinforcement systems if it is to find itself active within the workplace.

2. Intrinsic Motivation and O.B. Mod.

Bandura (1969) addressed the unintended motivational consequences of using extrinsic rewards to control behavior:

> The deliberate use of positive reinforcement, particularly in the form of tangible rewards, often gives rise to ethical objections and concerns about harmful effects that may result from such practices. The attitude most commonly expressed is that desirable behavior should be intrinsically satisfying. It is feared that, if persons are frequently rewarded, they will be disinclined to behave appropriately unless continually paid to do so, and when the customary rewards are discontinued they will cease responding altogether. It is further assumed that... contingent reinforcement is likely to interfere with the development of spontaneity, creativity, and intrinsic motivational systems (pp. 234-235, emphasis added).

With similar concern, Levine and Fasnacht (1974) in an article entitled "Token Rewards May Lead to Token Learning" in the American Psychologist, issued a caveat to behavior modifiers, especially those among organizations. They wrote:

> ... based on both theoretical considerations and practical experience, we feel that token approaches will do more harm than good... In our haste to demonstrate that learning can be increased, productivity raised, and manner improved, we operant-oriented therapists may in the long run be decreasing the

frequency of the very behaviors we wish to increase (pp. 817-818).

The relevance of considering intrinsic motivation when applying O.B. Mod. may appear contradictory. While behavior mod. has been introduced and reviewed as an alternative to motivating through internal means, this paper acknowledges the value of the internal theorist. Reviewers have continuously pointed out however, that while internal theories of motivation have aided general understanding they have done little to guide the manager as to what specific steps he/she should take to change behavior (Luthans & Kreitner, 1975).

Behavior mod. we recall, views organizational behavior as a function of its consequences. That is, behavior is controlled by extrinsic stimuli. The viewing of work behavior as a response to external stimuli has however been considered personally offensive, socially-inappropriate, and tantamount to bribery.

Locke (1977) did not deny that behavior can be influenced by its consequences. He pointed out that other theories have already accounted for such effect without denying or ignoring the importance of an individual's internal states (recall expectancy theory). Locke matter of factly held that people hold different values, needs and feelings. Agreeably, Locke admits that these "internal" events have been perhaps over-emphasized by management, helping little in the actual practice of management. But, he vigorously attacks the behaviorist for denying their existence (or ignoring their

importance). To do this, simply "flies in the face of what is known" (Locke, 1977).

People may not behave only for extrinsic consequences. That is, "intrinsic" motivation may explain work behaviors. Workers may perform behaviors due to the pleasure of the task itself. (A more "thorough" review of this concept will appear in Chapter IV; for now the focus is on the effect tokens may have on "intrinsic" motivation.) The concept of intrinsic motivation has been based upon the theories of both White (1959) and DeCharms (1968).

White's (1959) notion was one of "competence motivation." He suggested that when people "perform" they are naturally motivated to do well in order to experience a sense of competence. Since experiencing a sense of competence is a pleasurable event, individuals will be motivated to attain it.

DeCharms (1968), put forward the notion of "personal causation." He assumed that individuals need to feel responsible for their own actions. Having responsibility for one's own action is having the freedom to choose among alternatives. This occurs in the absence of pressure (from a positive or negative nature) to choose one alternative over another. Whereas negative pressure is obvious (if you don't do "this," you're fired), positive pressure is less obvious. It is a method of positive "coercion."

McCormick and Ilgen (1980) described positive coercion. The individual loses freedom to choose among alternatives because of "positive inducements" (reinforcements) to act in one way. They described the situation as wearing "golden handcuffs."

White's notion and DeCharms' were combined to maximize motivation at work. By combining "competence motivation" and "personal control," jobs could be designed to maximize the feelings of competence and control over one's actions. Under such conditions, the individual can reinforce him/herself by feeling a sense of accomplishment from just "doing the job." The total allegiance to extrinsic stimuli that behavior mod. makes, refutes the assumption that people work for intrinsic reasons and "have the instinctive desire to succeed regardless of reward" (Babb & Kopp, 1978).

Additionally, the ubiquitousness of the reinforcement principle on work motivation has been refuted. Atkinson's (1957) theory of achievement motivation and his empirical findings concerning success and failure raised doubt about the application of reinforcement theory. His work demonstrated that a person may not be influenced merely by a reinforcing consequence. Individuals who desire "achievement" are best motivated by "intermediate" risk. That is, although a certain task may lead to (easy) rewards, this reward may not motivate certain types of individuals to perform that task.

This line of empirical research is suggesting that operant techniques may be decreasing the "intrinsic satisfaction" the worker

may feel from merely performing challenging tasks. Laboratory studies have indicated that contingent extrinsic stimuli may be the first step towards removing the worker's opportunity of gaining satisfaction from the work itself.

> One process by which intrinsic motivation can be affected is a change in the perceived locus of causality from internal to external. This will cause a decrease in intrinsic motivation, and will occur, under certain circumstances, when someone receives extrinsic rewards for engaging in intrinsically motivated activities (Deci, 1975a, p. 139).

Deci (1971) had subjects put together a puzzle. This task was considered by nature, a "pleasurable" activity. One group was reinforced hourly for participation while another was reinforced contingent upon the completion of a puzzle.

Subsequent to the experimental session, subjects were given the opportunity to continue "playing" with the puzzles. Deci found that subjects who were paid for their task (contingency group) spent less time working on the puzzles in the no-pay session than those who were paid hourly. His generalized conclusion from this was that when external rewards (money) are contingent upon the performance of some job behavior, the desire to work on this once "enjoyable" task will diminish.

Lepper, Greene, and Nisbett (1973) also performed a laboratory study which supported this notion. Nursery school children who were "interested" in a drawing task were chosen as subjects. Subjects were randomly assigned to one of three experimental groups. An "expected" reward condition was defined as telling subjects that they were to receive a "good player certificate" if they played with the experimental items regardless of quality of play. An "unexpected" reward condition had subjects receiving this same reward at the end of the experimental period, but subjects were unaware during play that they would receive a reward. A "control" group did not receive or expect to be rewarded.

Two weeks later, all subjects were given the opportunity to engage in the drawing activity. (Control procedures of observing through a one-way mirror, teacher's indifference to play, and no mention of rewards were used during this interval.) The data revealed that the children in the "expected" condition where the reward was known to be contingent upon performance of a task demonstrated less interest in the task than did children in the other two conditions. The nature of the study (subjects, rewards, tasks and setting) obviously set limits to its generalizability.

Empirical evidence has consistently suggested that an inverse relationship exists between extrinsic rewards and intrinsic motivation. Studies that compare the intrinsic motivation of subjects who had previously performed some experimental task for pay with the intrinsic motivation of subjects who had previously performed this

task with no pay, have indicated that intrinsic motivation for previously paid subjects is below the level of intrinsic motivation for non-paid subjects (Deci, 1972a,b; Lepper & Greene, 1975; Greene & Lepper 1974; Calder & Staw, 1975; Ross, 1975; Deci, 1973; Reiss & Sushinsky, 1975; Pinder, 1976; Staw et al., 1980).

Recently, empirical investigation has focused on identifying moderators of the extrinsic reinforcement-task satisfaction/motivation relationship. This literature has added significantly to the understanding of behavior modification vis-a-vis organizational applications. Phillips and Freedman (1985) specifically dealt with this issue. Subsequent to reviews of research performed by Phillips & Lord (1980), Hammer & Foster (1975), and Farr (1976) all of whom have failed to demonstrate reductions in task satisfaction subsequent to contingent extrinsic reinforcement, they hypothesized the following:

> ... Reward contingencies per se have little or no effect on intrinsic task interest. Rather, the critical relationship between monetary incentives and intrinsic task interest involves the "salience" of the incentives... rewards will undermine intrinsic task interest only when they are a more salient reason for performing a task than are the challenge and competence implications associated with task accomplishment (p. 306).

Phillips and Lord (1980) concurred with this position drawing from their work simulation results involving video-display work tasks. "In understanding intrinsic motivation the crucial question is the extent to which task behavior is 'overjustified' [consequently resulting in lowered task satisfaction] by all salient external causes." (p. 217). They added that the effectiveness of the job design movement (see chapter IV) owes its success from ensuring that workers do not find extrinsic work events as the salient factor responsible for motivating work behavior. It is probably not coincidental that current popular theories of job design (e.g., Hackman & Oldham, 1976, 1980) have noted that autonomy and responsibility... and feedback (which should be related to feelings of competence) "are essential for intrinsically motivating tasks" (p. 217).

Condry (1977) performed an extensive review of the extrinsic reward contingency literature. His review indicated that the undermining cognitive effects associated with O.B. Mod. may depend on O.B. Mod.'s approach. Condry wrote: "in certain contexts the effect of task-extrinsic incentives is to undermine performance and subsequent interest in the rewarded activity" (p. 459, emphasis added). Using Condry's review as a guide, the following research addresses the effectiveness of O.B. Mod. in various contexts.

3. Nature of the Extrinsic Contingency

Ross (1975) demonstrated that when the subject was made "aware" of the extrinsic reward (not hidden from the subject during performance

of a task) task interest was significantly lower than for a group whose reward was "hidden." The findings of McGraw and McCullers (1974) were reviewed by Condry (1977) in regard to reward "salience." Condry explained that in this research the experimenters contingently reinforced children with candy under three conditions. In one condition, the subjects were reinforced by dropping the candy in a bowl directly in front of the subject. In another condition, the same reward was delivered but via "tokens." Finally, a control group received neither a token nor a reward. Although subsequent task interest was not measured in this study, salient extrinsic rewards significantly undermined task performance such that the "more salient" condition led to lowest task performance.

Pinder (1976) randomly assigned eighty male subjects to a "highly salient, continuous, contingent" reward schedule while the other half were paid according to an "extremely non-contingent schedule." (i.e., reinforcement not delivered contiguously). Data on four dependent variables; performance, intrinsic motivation, task satisfaction and general task orientation, provided convergent evidence that the salient extrinsic condition produced negative behavioral and cognitive consequences.

The nature of the reward and individual differences in response to such reward has been given some attention. Deci, Cascio and Krusell (1975) have demonstrated that social praise enhanced subsequent task interest for males while leaving the opposite effect on females. It was reasoned that spontaneous social praise was an "unaccustomed"

stimuli for the females. Reinforcing stimuli perceived as socially/contextually "inappropriate" (or "out-of-the-norm"), thus led to decreased interest in a work task. Condry's (1977) review paid attention to the importance of the nature of the extrinsic stimulus.

Anderson, Manoogian and Reznick (1976) manipulated the nature of the reward. They compared social, monetary and symbolic rewards and found that both symbolic (token) and monetary contingency conditions resulted in decreased intrinsic motivation; whereas the contextually or socially appropriate (normal) rewards had no such effect.

The effect of extrinsic contingencies has been moderated by the social context in which they occur. For example, Condry's (1977) review looked at "surveillance" as a manipulated contextual variable during operant experimentation. He described several empirical studies demonstrating the negative motivational side effects produced by extrinsic reinforcement under different degrees of "surveillance." Lepper and Greene (1975) for example, in an article aptly titled "Turning Play into Work," demonstrated that nursery school children who performed a task in a "hi-surveillance" condition (TV camera was on frequently) spent less free-choice time performing the experimental task than children in low-surveillance conditions.

A series of studies by Kruglanski et al. (1975a,b,c) have suggested that extrinsic contingencies can be moderated in order to use operant theory without causing lowered task interest. Kruglanski et al. (1975a,b,c) demonstrated that when the extrinsic reinforcement

stimulus was "endogenous" to the task at hand (being in "proper" context or socially-appropriate for the task), the undermining effect on subsequent task interest was not present. Kruglanski et al. demonstrated that when monetary payment was inherent to the task's content, its presence (vs. absence) increased intrinsic motivation (frequency of behavior). Contrarily, when extrinsic reinforcement consequences were "exogenous" (being "out of context" or socially inappropriate) their presence (vs. absence) decreased intrinsic motivation (frequency of behavior).

Thus, receiving money when playing a coin-tossing game which "traditionally" is played so that players get to keep money for good performance would not be associated with lowered intrinsic interest in the game. Similarly, receiving money for playing a good hand of poker would not be expected to negatively impact on one's cognitive orientation to poker-playing.

Condry's (1977) review summarized Kruglanski et al.'s (1975a,b,c) findings: "... the exogenous-endogenous distinction [points] out that some monetary outcomes are not rewards at all, but part of the ordinary expectations for that situation" (p. 468). Kruglanski et al. (1975a,b,c) relied on social norms for determining the contextual or social "appropriateness" of the reinforcement methodology. That is, if the situation is one in which one normally expected to receive a certain "consequence," then delivery of that consequence will not result in lowered task satisfaction. It is only when the contingent

reinforcing stimulus is abnormal or contextually inappropriate for the situation that negative effects on task interest will be realized.

Staw et al. (1980) more recently emphasized the importance of social norms when investigating extrinsic reinforcement systems. In particular, these researchers found that an extrinsic reward decreased task satisfaction and persistence (motivation) when a norm for no payment existed. However, when a norm for payment was associated with the task, the extrinsic reward did not have a negative effect on the subject's satisfaction or motivation. Thus it seems that when the qualitative nature of the reward is non-artificial, normal, or socially/contextually appropriate, extrinsic contingencies may not have a debilitating impact on the subject's cognitive orientation towards the task.

Little attention has been given to individual differences as moderators of the effects of reinforcement systems. Condry (1977) located and reviewed one significant study in this regard. Switzky and Haywood (1974) studied the differences between intrinsically-oriented vs. extrinsically-oriented subject reactions to extrinsic reward contingencies and self-reward contingencies (where subjects delivered their own reinforcement). Although the external validity of the research is suspect since the researchers used children as subjects, Condry (1977) utilized their findings to alert applied researchers that "clearly individual differences exist that modify the effect of reward contexts" (p. 467). In short, Switzky and Haywood's (1974) findings indicated that intrinsically-oriented subjects were

more persistent than extrinsics in the self-reinforcement condition and that extrinsics demonstrated greater persistence than intrinsics under the extrinsic reward contigency. Essentially, the research suggests the need to "fit" reinforcement systems to personal orientations. Congruity between the nature of the reinforcement system and the individual was beneficial to task performance.

More recently, Phillips and Freedman (1985) investigated the moderating effects of individual work values. Using a laboratory simulation approach with undergraduate business students, these researchers found individual work values to moderate the effects of extrinsic contingencies on task satisfaction. It was found that under contingent pay conditions, subjects with relatively higher extrinsic than intrinsic work values reported lower task satisfaction than subjects with relatively higher intrinsic work values. Phillips and Freedman wrote:

> ... rewards will undermine intrinsic task interest only when they are a more salient reason for performing a task than are the challenge and competence implications associated with task accomplishment (p. 306)... these results suggest that there may be important individual differences associated with task participants' reactions to extrinsic incentives. [We must try] to understand why and how people interpret the presence of such rewards if we are to more fully explain the relationship between [extrinsic

rewards] and intrinsic task interest (p. 132, emphasis added).

Empirical evidence has thus provided direction for O.B. Modifiers, albeit adding complexity to the matter. Not only must the O.B. Modifier adhere to operant principles, but organizational effectiveness demands consideration of personal work values and the qualitative aspects of the reinforcement system.

O.B. Mod. has not developed without its problems. First, there is the issue of "control" and the ethics of employing behavior modification in organizations. Secondly, there is empirical support for the notion that extrinsic rewards may often be counterproductive. Thirdly, recent research has focused upon the interactive effects of personal orientation and the nature of the reinforcement system; and finally, much of the empirical literature lacks internal validity due to its inadequate quasi-experimentation.

In sum, the introduction of contingent extrinsic rewards to the workplace may have undesirable side effects. When tasks become nothing more than a means to an end, this task becomes a de-valued activity which is less likely to be freely engaged in (Deci, 1973; Pinder, 1976; Kruglanski et al., 1975b). Deci (1975) warned that individuals may lose their intrinsic motivation because a task once enjoyed for its own sake, no longer promotes feelings of competence or personal control. The result he insists, will be that "extrinsically rewarding people for doing tasks they enjoy, will, in the long run,

decrease motivation." Phillips and Freedman (1985) have put forward the possibility that such an effect is stronger on extrinsic than intrinsically-oriented individuals.

The literature has revealed several problems with the use of behavior modification in industry. Ethical criticisms have questioned the "morality" of manipulating workers through external stimuli. This paper asserts that "behavior modification" is a continuous process at work and life and that "resistance" has resulted from the methods-used in systematically applying this "naturally-occurring" phenomenon, rather than from the nature of the operant principle itself.

Although individuals "shape" each other's behaviors continuously in "unsystematic" ways, the deliberate use of this "natural phenomenon" has produced controversy (Whyte, 1972). Empirically, such an approach has been associated with unintended negative effects on task satisfaction and intrinsic motivation (Deci, 1971, 1972a,b, 1973; Calder & Staw, 1975; and others); and practically and ethically it is viewed as "illegitimate," and "inappropriate" for work populations, and thus morally offensive (Argyris, 1971; Whyte, 1972; Babb & Kopp, 1978).

The application of behavior modification in the workplace has relied heavily on extrinsic reinforcement. The "artificiality" of the contextually/socially-inappropriate nature of such a methodology has been criticized as being tantamount to "bribery." We have also seen that O.B. Mod. has been criticized for ignoring the importance of

underlying "internal" needs, values and expectations in the worker. Empirical investigations have provided the impetus to further investigate interactions between such internal characteristics and the nature of reinforcement systems (Yukl & Latham, 1975; Phillips & Lord, 1980; Phillips & Freedman, 1985).

If O.B. Mod. is to survive as an industrial/organizational tool, researchers must begin to understand how to design reinforcement contingency systems to maximize their effect on desirable organizational behavior while minimizing unintended negative effects on worker's cognitive orientations towards work tasks.

Chapter IV Nature of the Work Itself

It is perhaps, ironic that a rationale towards a solution to O.B. Mod.'s problems may come from research that resulted from the writings of "internal" theorists. In this chapter we shall take a look at the job enrichment area from an "operant" point of view with the realization that the qualitative nature of reinforcement systems may be critical to the future of O.B. Mod.

We will see that the underlying principle of job enrichment and the "means" by which success has been found may be complementary to O.B. Mod. If so, it may be possible to integrate the basic notions of the job enrichment literature with operant psychology in order to produce an O.B. Mod. technique that will not be limited by those criticisms previously addressed.

A. Job Enrichment

The "rationale" of job enrichment is a by-product of the works of McGregor, Maslow, and Herzberg (Oldham & Hackman, 1980). These works had a significant impact on managerial thought. They demanded a definition of the worker that went beyond the view of man being simply rational and economic in nature. A complete review of their positions is however, beyond the needs of this chapter. Oldham and Hackman (1980) have traced their influence on job enrichment and the reader is advised to consult this reference for such a review. Here it is necessary to acknowledge that job characteristics theory is an

outgrowth of the "internal" approaches to work motivation with it's emphasis on motivation through the redesign of the "task itself."

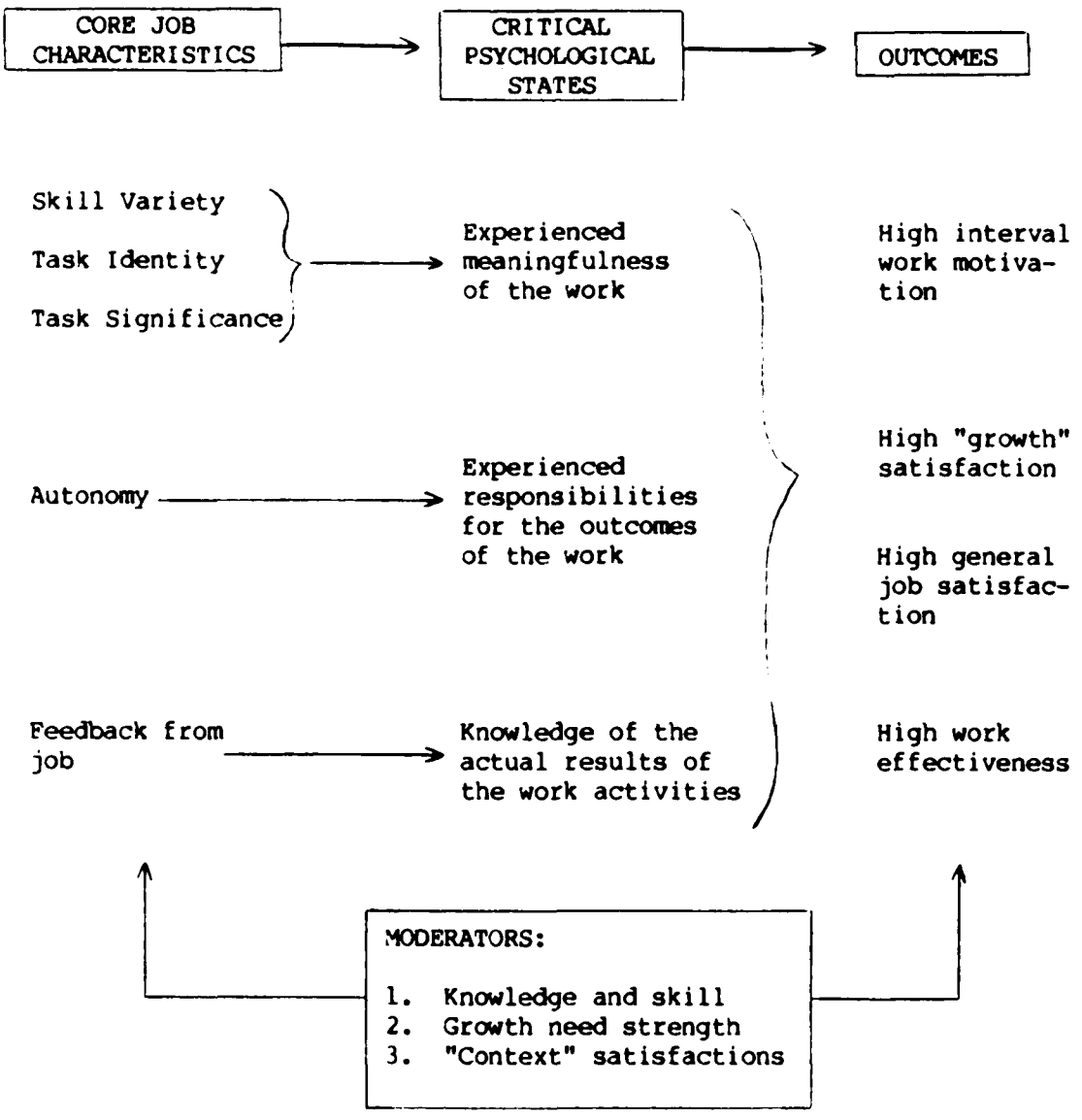
Oldham and Hackman (1980) have developed a technique for applying work re-design. Central to this technique is the job characteristics model. It is included here for several reasons, a) to aid in our understanding of what is meant by "restructuring" a task; b) to point out expected outcomes of enriched work, and; c) to indicate that a "simple" notion can become cumbersome (but more effective) when it has benefitted from empirical research.

The model is based on five job characteristics, critical psychological states, and internal work motivation (satisfaction is derived from work itself). In addition, individual differences are incorporated as "moderators." The model is obviously reflective of both Maslow and Herzberg and is reproduced in Figure 4.

By changing a task's characteristics or structure, it is presumed that one can influence a worker's psychological state (Oldham & Hackman, 1980, based this assumption on developmental evidence, see p. 78 in their text). The psychological state of "meaningfulness" can be attained by restructuring a task on three dimensions; skill variety, task identity, and task significance. As defined by Hackman and Oldham, they are as follows (pp. 78-80):

Skill variety is, "the extent to which a job requires a variety of different activities in carrying out the work. These activities must

Figure 4. Job Characteristics Model.



require the use of a number of different skills and talents of the person." Task identity is "the degree to which a job requires completion of a 'whole' and identifiable piece of work, that is, doing a job from beginning to end with a visible outcome." Task significance is, "the degree to which the job has a substantial impact on the lives of other people, whether those people are in the immediate organization or in the world at large." By enhancing a job on these three dimensions, the worker's feeling of "meaningfulness" will be enhanced.

Feelings of "responsibility" are assumed to emerge from designing "autonomy" into the job. This is defined as the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out.

Finally, the worker gains knowledge of the actual results of the work activities by receiving feedback from the job. Job feedback is the "degree to which carrying out the work activities required by the job, provides the individual with direct and clear information about the effectiveness of his or her performance."

A direct result of these "critical psychological states" attained through restructuring of the tasks themselves is: high internal work motivation; high growth satisfaction (in the Maslowian sense), high general job satisfaction, and high work effectiveness (job performance).

The literature, however, indicates that these outcomes are not consistently produced. Oldham and Hackman (1980) revised job characteristics theory taking into account individual differences revealed by these empirical findings that identified moderators (Aldag & Brief, 1979; Hackman & Lawler, 1971; Hackman & Oldham, 1976; Turner & Lawrence, 1965; Hulin & Blood, 1968; Oldham, 1976).

Three moderators were therefore designed into the model; knowledge and skill, growth need strength, and context satisfactions. It is important to point out that their incorporation into job enrichment was a result of empirical acknowledgement of an interaction between the nature of the work itself and personal characteristics.

Job enrichment has not been the panacea originally predicted. It has however had the significant virtue of "drawing upon" internal theorists and making them applicable to the work setting. In doing so, management has gained an appreciation for the necessity of changing the work itself in order to produce motivated workers.

Success with job enrichment has been "mixed" (Luthans & Reif, 1974) and its future is uncertain. As research continues, it is likely that other "moderators" (perhaps in the climate or structure of the organizaton, as well as intra-individual attributes) will be revealed. Practically, job enrichment may often be impossible to use due to limitations inherent in the manufacturing process. Also, management will likely react negatively to its costly, impractical nature. The complete technique has become a cumbersome and

complicated task (e.g., utilization of the Job Diagnostic Survey, assessment of individual differences, see Oldham & Hackman, 1980).

An operant analysis of the job enrichment effect suggests that "actual work behavior" can reinforce a consequence. The job enricher who is successful in changing a worker's behavior(s), has done so by re-designing tasks so that they are ("intrinsically") reinforcing. That is, the performance of the task has become a "reinforcing" event as a consequence of its "re-structuring." This however is no easy task since we must also design each task to be compatible with worker characteristics. This necessitates a realization of a possible interaction between the "allegedly" reinforcing stimulus and personal attributes.

Two significant events have thus occurred. First, (interesting) work behavior can be viewed as a "reinforcer" (when designed appropriately) rather than something that needs to be reinforced. And secondly, "reinforcement" (enriched work behavior) cannot be effective unless personal variables which moderate the reinforcement's effect on behavioral and cognitive criteria are considered. The reinforcing component may be attributed to the enriched task, but the behaviorist realizes that this reinforcement is "self-generated" or intrinsic in nature requiring no extrinsic reward.

O.B. Mod. has relied predominantly on the "extrinsic" reinforcer. We have addressed the literature that has brought such practice into serious reconsideration. Job enrichment, however, relies on task

design, an intrinsic means of reinforcing workers. No external (or "other-generated") means are utilized in producing satisfied, productive workers.

If we utilize this intrinsic reinforcement as a consequence in an operant paradigm we may remove the problems associated with extrinsic contingencies. It is also difficult to attack job enrichment on ethical grounds as a result of its utilization of "actual work behavior" as the reinforcement by which workers become motivated. The notion of using intrinsically-rewarding (task) behaviors in an operant paradigm at the workplace can find empirical support, not surprisingly, in the laboratory research of early learning theorists.

B. Work Behavior as Reinforcement

David Premack (1959, 1961, 1963a) observed the behaviors that adult albino rats freely engaged in when uninfluenced. In doing so, he noticed that these animals divided their time between eating, drinking, running and performing other haphazard behavior (Tarpy, 1975). It was also noticed that the frequency or rate of each response was constant across these animal subjects.

The development of the Premack Principle grew from an investigation into the "natural response tendencies" of the albino rat. Having discovered these response tendencies, Premack was to further uncover the impact that behaviorally-based operant principles would have on learning.

The discovery of natural response tendencies was described by Premack (1965) as the result of "anti-experimentation." Simply put, anti-experimentation "varies nothing" and records what occurs. Premack (1965) wrote; "Place the organism in as undemanding and invariant an environment as possible and observe the manner in which the animal varies despite the invariance of the environment" (p. 123). Indeed, the species specific response tendencies of rats in such an environment have been demonstrated to be very consistent (Premack, 1965; Stellar & Hill, 1952; Schaeffer & Premack, 1961).

In 1959 in an article entitled "Toward Empirical Behavioral Laws," Premack presented the concept of "rate differentials" (a concept reflecting the relative response tendencies of the rat population) as a "necessary and sufficient condition" for applying principles of reinforcement. Premack (1959) explained:

> Reinforcement results when an R of a lower independent rate [low probability behavior in unconstrained environment] coincides within temporal limits with stimuli governing the occurrence of an R of a higher independent rate (p. 219)... Any response A will reinforce any other response B, if and only if the independent rate of A is greater than that of B (p. 220).

Premack thus defined the "reinforcement value" of an activity as the independent probability [based upon rate differential] of that activity relative to other activities. Activities that are performed

often (by choice) have more "reinforcement value" than activities performed less often. Extending Skinnerian philosophy, Premack held that high probability behavior could be used to reinforce low probability behavior. In his "classic" experiment, it was demonstrated that a rat's "lever-pressing" could be increased by making "wheel-running" contingent upon its performance (Premack, 1963a). Similar effects were soon found with monkeys (Premack, 1963b).

The significance of the Premack Principle to the field of psychology was stated by Atkinson, Atkinson and Hilgard (1983). These reviewers wrote:

> ... Premack developed a powerful conception of reinforcement that can be conveyed in two statements: (1) for any organism, a reinforcement hierarchy exists in which reinforcers at the top of the hierarchy are those activities engaged in with greatest likelihood, given the opportunity; (2) for a given organism, any activity in the hierarchy may be reinforced (made more likely) by any activity above it and may itself reinforce any activity below it. This second statement is Premack's Principle (pp. 208-209).

The Premack Principle has since been successfully applied in educational and mental health institutions. Hosie (1974) used the Premack Principle to motivate the work of 5th and 6th grade school students. Students were first unobtrusively observed and the

frequency of their play with painting materials vs. clay modeling materials was recorded. A high probability behavior was therefore implicated for each of the subjects.

The time it took the subject to complete a reading task was targeted for reinforcement via the high probability behavior previously identified. The time taken to complete the reading task was statistically significantly reduced by reinforcement with the high probability play behavior.

Van Hevel and Hawkins (1974) modified the behavior of secondary school students using free "play" time as the reinforcer. During baseline a record was made of the percentage of time the subjects spent attending to work. When free-time was delivered contingent upon classwork behavior, the students increased the average percentage of time they spent working.

Kane and Gantzer (1977) investigated the reinforcing effectiveness of academic activities. Using a class of eight students, preferred academic activities were identified by student rankings. When preferred academic activities were made contingent upon less preferred academic activities, the latter significantly increased. Lyon (1976) also used preferred school activities as a reinforcer and increased less preferred classwork behaviors.

Mitchell (1973) applied the Premack Principle to shape the "work behavior" of schizophrenics. Two schizophrenics failed to respond to

token-based reinforcement systems and so were investigated as to their response to a behaviorally-based system. The reinforcer was operationalized as "sitting." When sitting was made contingent upon the performance of custodial tasks these tasks were performed more often. The therapeutic potential of a behaviorally-based reinforcement system for schizophrenics not responsive to tangible rewards was especially noted.

The assumption of Premack's Principle is that the performance of high probability behavior is itself, "pleasurable." Motivational theorists have described the "reinforcing value" of the performance of "tasks" under the rubric of "intrinsic motivation" (Weiner, 1980). Job enrichers have capitalized on this notion by re-structuring tasks so that they may produce such an effect (Oldham & Hackman, 1980). The arrangement of work behavior that is intrinsically pleasurable according to the Premack Priniciple has been over-looked by the O.B. Modifier.

Premack re-arranged contingencies in the animal's environment so that the performance of a "pleasurable" (high probability) activity was contingent upon performance of a "non-pleasurable" (low probability) behavior. This required the experimenter to identify those activities that are performed by the subject and "attach" to each activity, a measure of its "reinforcing value." Additionally, Premack's principle allows for the notion of an interaction between a reinforcement and personal characteristics.

According to Premack, no activity inherently provides reinforcement. A task demonstrates reinforcing character through its probability of occurrence. A task (activity) can at one time be exhibited at a high frequency and be "rewarding" and with another subject or at a different point in time with the same subject, not demonstrate itself to be of any "reinforcement value." The "reversability" of reinforcement was empirically demonstrated even for the same subject at different times.

Premack (1961) rationed water intake and exposure to a running wheel in order to manipulate the relative preference of each response. Initially, "drinking" occurred more frequently than "running" on a wheel. When the animal was no longer thirsty, but deprived of access to the wheel, wheel-running behavior was used to reinforce drinking (low probability behavior). Drinking was increased when the wheel-running behavior was made contingent on drinking. In short, he suggested that there was no such thing as a universal, intrinsically-pleasurable stimulus (for the albino rat).

The activities of an organism can be observed and listed. The "reinforcement value" (pleasure) of each task may be "measured." We may then use the intrinsically-reinforcing nature of high probability activities to reinforce low probability activities. In essence, the nature of a task itself can be used to increase the frequency of some other behavior. We must however, always keep aware of the fact that any reinforcing stimulus (be it extrinsic or intrinsic to the target behavior) owes its reinforcing property to the specific nature of the

situation (as influenced in part by an organism's "needs," "values," and "expectations"). We cannot infer reliably when a stimulus will be a reinforcement. In fact as we noted, it has been empirically demonstrated that reinforcement is "reversable" (Premack, 1961).

Acknowledgement of internal states and qualitative features of the reinforcement system are critical to the understanding of "how" the stimulus will affect behavior. The Premack Principle affords the O.B. Modifier the opportunity to manipulate the nature of the reinforcement system so that a socially-appropriate, or "normal," (i.e., endogenous) reinforcement stimulus can be used to produce desired behavioral changes. Since the desirable work activity is controlled by another "naturally-occurring" or "normal" activity for the situation, the contingency is not likely to be viewed as unethical or immoral. Furthermore, such a system may minimize the unintended consequences on motivational and attitudinal variables typically associated with reinforcement paradigms.

Although Premack has been largely ignored by applied organizational researchers, one in situ empirical study did attempt to utilize the principle. Gupton and LeBow (1971) attempted to demonstrate Premack's potential on-the-job. The study however, suffered from some methodological flaws produced by "generalizing" Premack's original paradigm verbatim to the work setting.

In this study, the experimenters defined the "reinforcing" task as that task which salesmen engaged in most frequently. High probability

behavior was therefore defined as "renewing old appliance service contracts" by salesmen. A behavior which was emitted less frequently by salesmen (low probability behavior) was the "selling of new applicance service contracts." Following a baseline period for the two salesmen, high probability behavior was made contingent upon the low probability behavior. Simply put, the work situation was "re-arranged" so that the performance of one task was contingent upon performance of another. Gupton and LeBow (1971) wrote:

> In many industrial environments, motivating employees to be more productive has been a complex problem for management personnel. Rephrasing motivational questions into reinforcement questions simplifies the planning of a program to increase productivity by causing attention to be focused on making reinforcing stimuli... contingent upon the emission of specific behavior... (p. 79).

The subjects consisted of two male part-time telephone solicitors. Tally sheets were given to each subject for purposes of recording the type of call made (i.e., renewal contract or new service contract), the number of sales and the number of refusals. If a call resulted in the customer requesting to be called back, the tally indicated a "refusal." If a call resulted in no customer contact, no tally was recorded.

An "artificial" work session was arranged whereby subjects were instructed to telephone a list of customers in no particular order. The experiment consisted of 25 daily three-hour sessions. These 25 sessions were divided into three phases. Phase I, (a ten-week period), allowed compilation of baseline data. No reinforcement contingency was in effect during this phase. The mean percentages of renewal sales for subjects one and two during Phase I were 31 and 27 percent respectively and the mean percentages of new service contract sales were 13 and 10 percent respectively.

Phase II (a ten week period) instituted the reinforcement of low probability behavior (new service contracts) with high probability behavior (renewal sales). Specifically, five renewal calls were allowed contingent upon one new service sale. For subject one, the mean percentage of renewal sales increased by four percent from baseline and the other subject (subject two) increased renewal sales by 22 percent from baseline.

The mean percentage increase in new service sales (the low probability behavior) for subject one was 10 percent over base rate (i.e. 14.3%). The mean percent increase in new service sales for subject two was 21 percent over base rate (i.e. 12.1%). The statistical significance of these data were not reported and at best we can note a tendency for behaviors to be in accordance with the Premack Principle.

During Phase III, (a five week period) the researchers removed the contingency. Sales for both types of contracts declined. The mean percentage sales of renewal contracts however dropped by only one percent for subject one and dropped by 21 percent for subject two.

The study also suggested the possibility that the reinforcement contingency may have had an undermining effect on attitude towards the work task, although the researchers did not address this issue at any length. They noted however that after the reinforcement contingency was removed, both subjects "immediately stopped making new service calls." Unfortunately, more detail regarding this effect was not provided. Must reinforcement contingencies remain in effect indeterminantly in order to avoid such negative effects? Did this zero response rate in new service calls reflect a negative attitude towards the task or was fatigue to blame? How did this "behavior-based" system compare to standard "bonus-based" systems of reinforcement at the Firm? What "individual differences" may have accounted for the differential impact of this reinforcement system?

Slight increases in the selling of new appliance service contracts resulted. When the contingency was removed each employee's low probability behavior dropped (no reintroduction of the intervention was noted). These results however are qualified. While indeed the contingency was effective for both workers, it was more effective for one of the subjects.

There are several problems with this design and methodology. No control for "reactivity" was incorporated into the design. Was the Premack Principle or the Hawthorne effect responsible for these results? It is uncertain whether the Premack contingency was responsible for the increases in sales or whether "any sort" of intervention may have influenced sales in the same manner.

While "history" was experimentally controlled for by the removal phase, a behavior such as the number of new appliance contracts sold may still have been influenced by "other events" at the time of intervention (market conditions, number of appliances sold that month, store's inventory, etc.). The results are confounded by "reactivity" (salesmen received an extraordinary amount of attention) and perhaps to a lesser extent, history. Results are further limited since a total sample of two employees comprised the study.

Methodologically, Gupton and LeBow interpreted literally Premack's notion. Premack's discovery was based upon behaviors that animals "freely emitted" in an unconstrained environment. High probability behavior was synonomous with "pleasurable" activity (intrinsically-reinforcing) since the organism freely-chose to perform that act over others.

Workers however, are in a relatively constrained environment. They do not have the freedom to emit whatever behaviors they enjoy. A worker may perform a task very frequently only because the job demands it be so. In this case, a high probability behavior (performed

frequently) may have no intrinsically gratifying or reinforcing value. Gupton and LeBow assumed that the "frequency" of a worker's activity could be used to identify an "intrinsic" reinforcer as was effectively done by Premack in the laboratory setting.

The differential effect of the contingency may reflect the possibility that the high probability behavior was of greater "reinforcement value" for only one of the two salesmen. In sum, "constrained environments" (work setting) cannot assess the "reinforcement value" of an activity by observing the frequency of a behavior. Also, the fact that "differential results" were obtained attests to the importance of realizing and controlling for the "interactive" relation between a reinforcement (defined here as a task) and worker characteristics. In spite of these methodological and experimental shortcomings, this study indicated that the Premack Principle within a work setting was worthy of further investigation.

Porter (1973) was one of the few to realize the potential of intrinsic reinforcement, or as he put it, "turning work into non-work." Job enrichment grew from this notion, but as we saw, its "technology" is expensive, cumbersome, and often impractical. While Porter was concerned with making "work, non-work" so that employees would "commit their service" to a single organization, his awareness for the wide-range potential of this simple notion was evident: "Those organizations that are able to develop and implement imaginative reward contingencies... will have a distinct advantage over other organizations" (p. 127, emphasis added).

Chapter V Statement of the Problem and Hypotheses

O.B. Mod. has relied on extrinsic stimuli in order to produce behavioral changes at work. This has resulted in criticisms from empirical, practical and ethical perspectives. The former has addressed the inadequately controlled nature of the research and suggests that the "cognitive costs" unintentionally increased by reliance on extrinsic reinforcement systems undermine the positive behavioral benefits. Recent research suggests that this effect may be stronger on extrinsically-oriented than intrinsically-oriented individuals (Phillips & Freedman, 1985). The latter criticism reflects concern over the notion of "control" and applicability to a work setting.

Behavior modification in the workplace has been perceived by some as an unethical means of manipulating behavior. This paper has argued that we are all "controlled" and we all "control" in all walks of life. O.B. Mod. simply takes this "truism" and systematically applies it to a work setting. In this "systematic" application, O.B. Mod. however, may have invested too heavily in techniques that are "inappropriate" from a social or work-related (contextual) perspective. This "qualitative" deficiency in the design of effective extrinsic reinforcement systems has lead industrial/organizational psychology towards the development of a "behavioral technology" which remains unacceptable socially and unacceptable from the standpoint of its subsequent impact on individual cognitive orientations towards work tasks.

The "abnormal" or inappropriate nature of delivering extrinsic reinforcers contingent upon performance of specific work tasks has been criticized for its "illegitimacy" (Campbell & Pritchard, 1976; Staw, 1984; Babb & Kopp, 1978; Whyte, 1972; Argyris, 1971). Therefore, if O.B. Mod. is to become a viable managerial alternative it must alter its apparent socially-unacceptable nature. Moreover, if such a qualitative change can be designed into an extrinsic reinforcement system perhaps the unintended negative consequences associated with such systems on worker task satisfaction and intrinsic motivation would be avoided (Deci, 1972, 1975a,b; Lepper et al., 1973; Kruglanski et al., 1972, 1975a,b,c; Calder & Staw, 1975; Ross, 1975; Pinder, 1976; Phillips & Lord, 1980; and others).

The literature revealed a neglect for systematic investigation into interactions between the reinforcement system and individual characteristics (Babb & Kopp, 1978; Yukl & Latham, 1975; Phillips & Lord, 1980). If O.B. Mod. is to be effective it must be resistant to debilitating moderators. Research has demonstrated recently that indeed "work value" orientation may be such a moderator (Phillips & Freedman, 1985).

An operant approach to "behavioral change" which is resistant to attacks upon its social "legitimacy" and does not threaten satisfactions derived from the work itself is mandatory if O.B. Mod. is to realize its potential. The job enrichment literature provides guidance in this regard. When personal characteristics are considered, a job task can be "re-structured" in order to make its

performance a satisfying experience for the worker. The application of the Premack Principle in the workplace is a variation upon this theme. This principle makes possible the utilization of behavior modification such that the aforementioned social and empirical considerations may be satisfied. In short, by identifying "pleasurable" job tasks, the O.B. Modifier can "re-arrange" work activities in order to reinforce organizationally-desirable behaviors with other more personally-rewarding job behaviors. This consequence, a self-generated or "intrinsic" reinforcer has much applied potential.

The Premack Principle has been employed successfully in a variety of settings (Smith, 1978; McMorrow et al., 1978; Ramer, 1980). One empirical study performed in a work setting has provided some limited evidence for the potential of Premack at work (Gupton & LeBow, 1971). The application of the Premack Principle to a work setting will have the significant virtue of using "actual" work behavior to reinforce other work behavior. Furthermore, by designing a reinforcement system in a manner which is "normal" or contextually/socially appropriate (i.e., legitimate) the O.B. Modifier may gain signficant benefits. Specifically, such a reinforcement system may minimize the occurrence of negative effects on intrinsic motivation and task satisfaction and also offer a practical, ethical means of utilizing operant technology in the workplace.

The design of reinforcement systems to conform to the work setting is an extension of the "contextual redesigns" used by Kruglanski et al. (1975a,b,c) and Staw et al. (1980). When the reinforcement system

was "endogenous" or contextually/socially appropriate (i.e., a "normal" event) contingent reinforcement did not adversely affect cognitive orientations towards the work task in comparison to "exogenous" or "unusual" reinforcement contingencies.

Also, the effect of maximizing "congruity" between the nature of the reinforcement system and individual characteristics could serve to enhance productivity. Switzky and Haywood (1974) demonstrated that intrinsically-oriented subjects in a self-initiated reward system performed better than extrinsically-oriented subjects in that reward system. Similarly, extrinsically-oriented subjects were more productive than intrinsically-oriented subjects in an extrinsic reinforcement system.

The effect, however, of extrinsic reinforcement system-person "congruity" may not be favorable in terms of the system's subsequent impact on task satisfaction/intrinsic motivation. Phillips and Freedman (1985) demonstrated that subjects with higher extrinsic than intrinsic work values reported lower task satisfaction following extrinsic reinforcement. It has been suggested that the "salience" of the behavioral cue (the reinforcer) is the determinant of whether the subject will attribute his/her work performance to the "task itself" or to some external force (the reinforcer) (Hamner & Foster, 1975; Farr, 1976; Phillips & Lord, 1980). Unknown is the extent to which "congruity" will operate on these cognitive variables when the behavioral cue is "intrinsic" in nature.

O.B. Mod. is inevitably a topic of "control." Therefore, the effect of varying the nature of the methods used to reinforce work behavior and individual work values upon feelings of being "illegitimately" manipulated or "coerced" is of interest. This would raise implications regarding the ethical and practical application of Organizational Behavior Modification.

Whereas individuals are expected to increase task performance when their work values are compatible to work policies, their attitudes are expected to be determined by their attribution for their task performance. This will be a function of both the salience or nature of the reinforcement system (Hamner & Foster, 1975; Farr, 1976; Ross, 1975; and others) or where the salience of the reinforcer is controlled the effects of personal work values on attributions for task performance (Phillips & Freedman, 1985).

In accordance with the literature reviewed, an experiment which manipulates the nature of the reinforcement system and investigates its interacting effects with personal work values would be expected to find the following:

Productivity

Qualitative differences in the nature of reinforcement systems should differentially impact upon subjects' task productivity. Specifically, due to the socially/contextually appropriate nature of

the reinforcement system (Kruglanski et al., 1975a,b,c; Condry, 1977; Staw et al., 1980); it is expected that:

H1: Subjects in the intrinsically-based reinforcement system complete more tasks than subjects in the extrinsically-based reinforcement system.

The effect of qualitative differences between reinforcement systems is expected to be moderated by personal orientations towards work (Phillips & Freedman, 1985). Therefore, subjects are expected to demonstrate greater motivation to produce when their personal orientation towards work and the nature of the reinforcement system they experience are compatible. Individuals should demonstrate greater productivity when the work policy they must adhere to is consistent with their personal work values (Switzky & Haywood, 1974).

It is hypothesized that:

H2: Subjects in a reinforcement system that is congruent with their personal work values will be more productive than subjects in a reinforcement system that is not congruent with their personal work values.

The specific contrasts of interest in accordance with the above hypothesis (H2) are:

H2a: Extrinsically-oriented subjects in the extrinsically-based reinforcement system complete more tasks than do intrinsically-oriented subjects in the extrinsically-based reinforcement system.

H2b: Intrinsically-oriented subjects in the intrinsically-based reinforcement system complete more tasks than do extrinsically-oriented subjects in the intrinsically-based reinforcement system.

Similarly, across reinforcement conditions it would be expected that where compatability exists between personal orientation to work and the manner in which one's work behavior is influenced (i.e., the reinforcement system) productivity should be enhanced.

It is expected that:

H2c: Extrinsically-oriented subjects in the extrinsically-based reinforcement system complete more tasks than do extrinsically-oriented subjects in the intrinsically-based reinforcement system.

H2d: Intrinsicially-oriented subjects in the intrinsically-based reinforcement system complete more tasks than do intrinsicially-oriented subjects in the extrinsically-based reinforcement system.

Attitude Towards the Task: Task Satisfaction and Intrinsic Motivation

It has been demonstrated that extrinsic reinforcement systems have unintentionally affected negatively task satisfaction and intrinsic motivation (Deci, 1971, 1973; Levine & Fasnacht, 1974; Pinder, 1976; Pritchard et al., 1977; Greene et al., 1976; and others). It has been shown that when the reinforcement system is "normal" (socially/contextually appropriate) these negative effects have not been found (Kruglanski et al., 1975a,b,c; Staw et al., 1980). Qualitative differences between the reinforcement systems are expected to impact upon reported task satisfaction and intrinsic motivation.

Because the reinforcer in the intrinsic reinforcement system is a normal or appropriate means of reinforcing behavior, (since it is a "self-generated" reward or work task) this reinforcement system should have a more positive effect on task satisfaction and intrinsic motivation than will the extrinsic reinforcement system.

Specifically;

H3: Subjects in the intrinsically-based reinforcement system report greater task satisfaction than subjects in the extrinsically-based reinforcement system.

H3a: Subjects in the intrinsically-based reinforcement system demonstrate greater intrinsic motivation

than subjects in the extrinsically-based reinforcement system.

However, any reinforcement contingency system would be expected to have more negative affects on attitude towards a task than no reinforcement at all (Lepper & Greene, 1975; Deci, 1972a,b, 1973; Levine & Fasnacht, 1974; Pritchard et al., 1977; Pinder, 1976).

Consequently;

H4: Subjects in reinforcement systems report lower task satisfaction than subjects not in a reinforcement system.

H4a: Subjects in reinforcement systems demonstrate less intrinsic motivation than subjects not in a reinforcement system.

Recent investigation has found that extrinsic reinforcement systems (which are qualitatively "exogenous" or "abnormal" for the situation) are more detrimental to the task satisfaction and intrinsic motivation of extrinsically-oriented individuals in comparison to intrinsically-oriented individuals (Phillips & Freedman, 1985). Paradoxically, these investigators found that the effect of compatability between extrinsic work values and the extrinsically-based reinforcement system was not beneficial to the individual's attitude towards the task. This effect has been explained by the

"salience" of the reinforcer. When the reinforcer is perceived as the "more salient" reason for engaging in a task than the challenge of the task itself, subsequent intrinsic motivation and task satisfaction are consequently negatively affected (Phillips & Freedman, 1985). Where "congruity" or compatability exists between a contingency-valued or extrinsic individual (whose tasks are perceived as a means to an end) and a reinforcement contingency system, the individual is likely to attribute task performance to the reward and not the task itself. However, individuals with task-oriented or intrinsic work values (whose tasks are perceived as worthy of being performed for their own sake) should be less likely to attribute their task behavior to the reward. The primacy of an intrinsic orientation inhibits the attribution of task performance to the reinforcement contingency. Where personal work orientation is varied within a reinforcement system, individuals with stronger extrinsic work values than intrinsic work values should attribute task performance to the reinforcement system thereby affecting negatively task satisfaction and intrinsic motivation.

It is hypothesized that:

H5: Within each reinforcement system, intrinsically-oriented subjects report greater task satisfaction and demonstrate greater intrinsic motivation than do extrinsically-oriented subjects.

The specific contrasts of interest in accordance with the above hypothesis (H5) are:

H5a: Extrinsically-oriented subjects in the extrinsically-based reinforcement system report lower task satisfaction than intrinsically-oriented subjects in the extrinsically-based reinforcement system.

H5b: Extrinsically-oriented subjects in the extrinsically-based reinforcement system demonstrate less intrinsic motivation than intrinsically-oriented subjects in the extrinsically-based reinforcement system.

H5c: Intrinsically-oriented subjects in the intrinsically-based reinforcement system report greater task satisfaction than extrinsically-oriented subjects in the intrinsically-based reinforcement system.

H5d: Intrinsically-oriented subjects in the intrinsically-based reinforcement system demonstrate greater intrinsic motivation than extrinsically-oriented subjects in the intrinsically-based reinforcement system.

Findings have indicated that "salient" consequences in operant paradigms have been more detrimental to task satisfaction and intrinsic motivation than non-salient consequences (Ross, 1975; McGraw & McCullers, 1975; Pinder, 1976; Lepper & Greene, 1975). Consequences

of behavior that have been contextually-appropriate or "endogenous" have minimized negative effects on these variables (Kruglanski, 1975a,b,c). When consequences have not been salient because they are a "normal" expectation for the situation, negative effects have also been minimized (Staw et al., 1980). Phillips and Freedman (1985) held that consequences will have a negative impact on task satisfaction and intrinsic motivation when these consequences are a more salient reason for performing the task than the challenge of the work itself. Therefore, it is expected that the more salient reinforcement system (extrinsic) will impact more negatively than the less salient, intrinsic reinforcement system on task satisfaction and intrinsic motivation when personal work orientation is controlled.

It is hypothesized that:

H6: Holding personal orientation constant, subjects in an intrinsic reinforcement system report greater task satisfaction and demonstrate greater intrinsic motivation than do subjects in an extrinsic reinforcement system.

In accordance with the above hypothesis (H6), the following contrasts are of interest:

H6a: Extrinsically-oriented subjects in the intrinsically-based reinforcement system report greater task satis-

faction than extrinsically-oriented subjects in the extrinsically-based reinforcement system.

H6b: Extrinsically-oriented subjects in the intrinsically-based reinforcement system demonstrate greater intrinsic motivation than extrinsically-oriented subjects in the extrinsically-based reinforcement system.

The salience of an extrinsically-based system should also affect the task satisfaction and intrinsic motivaation of intrinsic subjects more than a less salient or intrinsically-based system. That is, where intrinsic work value orientation is equal, a highly salient reinforcement system would be expected to affect more negatively task satisfaction and intrinsic motivation than a less salient reinforcement system.

Therefore:

H6c: Intrinsically-oriented subjects in the intrinsically-based reinforcement system report greater task satisfaction than intrinsically-oriented subjects in the extrinsically-based reinforcement system.

H6d: Intrinsically-oriented subjects in the intrinsically-based reinforcement system demonstrate greater intrinsic motivation than intrinsically-oriented

subjects in the extrinsically-based reinforcement system.

Coercion

The operant paradigm is designed to influence behavior. Coercion is the extent to which an individual feels "inappropriately or illegitimately" manipulated. Because newly introduced reinforcement contingencies are not a norm in the workplace, it is expected to be perceived as an inappropriate or illegitimate means for obtaining desirable work behavior. Argyris (1971) and Whyte (1972) have strongly objected to such paradigms in the workplace. Subjects experiencing reinforcement contingent upon specific task performance are therefore, expected to feel "coerced." Therefore:

H7: Subjects in the reinforcement systems report greater feelings of being coerced than subjects in the no-reinforcement system.

Social values reflect concern for the "how" and why behavior is controlled. When behavior is controlled by a method that is in accordance with social morality, there is no concern for the "coerciveness" of the act. However, when the method of control is not in accordance with social norms or social standards of legitimacy, the method is likely to be perceived as immoral or illegitimate, thus being coercive in nature.

A reinforcement system that is based upon a "self-generated" reward (an enjoyable activity) is less likely to induce feelings of being coerced since the person's own behavior is responsible for the reinforcing effect. Conversely, a reinforcement system that is based upon rewards that are delivered by some external agent as a means of affecting behavior will likely produce feelings of being coerced (Argyris, 1971; Whyte, 1972; Babb & Kopp, 1978).

Therefore:

H8: Subjects in the extrinsically-based reinforcement system report greater feelings of being coerced than subjects in the intrinsically-based reinforcement system.

Compatability between personal orientation towards work and the means by which the subjects are influenced should minimize feeling "coerced." That is, a lack of conflict between work values and the manner in which work policy influences behavior should not produce the feeling of being "coerced."

It is hypothesized that:

H9: Subjects in a reinforcement system that is compatible with their personal work values report a lower feeling of having been coerced than do subjects in a reinforce-

ment system that is not compatible with their personal work values.

In accordance with the above hypothesis (H9), the following contrasts were of interest:

H9a: Intrinsically-oriented subjects reinforced by an extrinsically-based system report greater feelings of being coerced than extrinsically-oriented subjects reinforced by the extrinsically-based system.

H9b: Extrinsically-oriented subjects reinforced by an intrinsically-based system report greater feelings of being coerced than intrinsically-oriented subjects reinforced by the intrinsically-based system.

Across reinforcement systems it would be expected that when work values and the method of control of work behavior are compatible, feelings of coercion will also be minimized.

H9c: Intrinsically-oriented subjects reinforced by an intrinsically-based system report lower feelings of being coerced than intrinsically-oriented subjects reinforced by an extrinsically-based system.

H9d: Extrinsically-oriented subjects reinforced by an extrinsically-based system report lower feelings of being coerced than extrinsically-oriented subjects reinforced by an intrinsically-based system.

Chapter VI Method

A. Summary of Research Design

A laboratory simulation experiment was designed to investigate the effects of qualitative differences in reinforcement systems on behavioral and cognitive criteria. The effects of such systems when interacting with individual differences was also of interest. Therefore, a 2 x 4 Factorial Design was used. The independent variables were: (1) the nature of the reinforcement system; and (2) Personal Orientation towards Work (Work Values). The dependent variables were: (1) productivity (quantity); (2) task satisfaction; (3) intrinsic motivation towards the task; and (4) the reported feeling of "coercion." The experimental design is presented in Figure 5. The sample size was 120 with 15 subjects per cell.

The between-subjects design rather than a within-subjects design allowed the investigator to avoid methodological problems. Particularly, the between-subjects design was less demanding on both the subject's and experimenter's time and minimized confounding problems related to performance fatigue and subject participation in a repeated measures design.

The Intrinsic reinforcement condition tested the effects of a reinforcer which was designed to be a legitimate means of controlling behavior. This reinforcement was operationalized as the performance of a video-display task. Whereas extrinsic reinforcement may be

Figure 5. Experimental Design.

REINFORCEMENT CONTINGENCY SYSTEM

WORK VALUE ORIENTATION	INTRINSIC	EXTRINSIC	CONTROL	CONTROL-EXTRINSIC
INTRINSIC				
EXTRINSIC				

viewed as "legitimate" or "illegitimate," an intrinsic or Premack-based behavioral reinforcer is always legitimate but may or may not act in a reinforcing manner. The video-display task was pre-tested to demonstrate empirically its reinforcing nature. These results are presented in Section F of this chapter. In essence, the Intrinsic reinforcement group allows the experimenter to investigate the notion that "actual" job behavior could be used to reinforce other organizationally-desirable job behavior.

The Extrinsic reinforcement condition (Token) tested the effects of a reinforcer which was not contextually or socially appropriate (i.e., the reward was "not a norm" or was "illegitimate"). This reinforcement was operationalized as a token, redeemable for an amount of money determined during pre-testing. As described in Section F, part 2, pre-testing determined the reward magnitude of the token in order to equate the quantitative value of each of the reinforcement systems.

No consequences were contingent upon task performance in the Control group. This group provided a no-reinforcement control for the study in order to compare its effects to reinforcement systems on the dependent variables.

A Control-Extrinsic condition was also included in the study in order to compare the productivity of the extrinsic condition involving the word-search, token and card-sort to an equal extrinsic condition without the card-sort. This was of interest as a control for the

extraneous task designed into the extrinsic condition which while acting as an activation control confounded the extrinsic condition with an additional task (see Section D, Procedure).

B. Subjects

The sample comprised 120 undergraduate students from the City University of New York. Students from Bernard M. Baruch College and Brooklyn College volunteered their participation in this study. Sixty-six percent of the sample were male and only three percent of the sample came from Brooklyn College.

C. Setting

The experiment took place in a college experimental laboratory room. An advanced industrial/organizational psychology doctoral student was employed as the experimenter. One large table (dimensions of 3 feet by 7 feet) held necessary stimulus materials. Both the experimenter and subject were seated at this table. The room was well-lit and completely void of distraction. The experimental apparatus included an Atari video computer system complete with joystick controls and an Emerson color video monitor (Model EC10R) with a 10 inch screen. A Space Invader game program was used as the video task (Atari, program CX-2632).

D. Procedure

The experiment began with each S completing the 18-item Work Value Questionnaire during their normal classroom time (see Appendix A). Ss were then selected if they were characteristically intrinsically or extrinsically-oriented using the criteria defined in Section E, part 5. Subjects were told that they would be asked to follow-up in the study on a random basis, so they may or may not be chosen again. This served as an explanation to those not chosen for the experiment proper. At a later point in time the intrinsically and extrinsically oriented subjects were contacted during their class time and the experimenter made arrangements for their participation in the experiment. Upon arrival to the experimental laboratory room the S was informed that the experiment would consist of two sessions (see Appendix B). Session I, they were told, involved working on a word-search puzzle (see Appendix C) while following a specific work policy and that Session II involved a similar puzzle. The experiment would thus be described as a thirty minute procedure, although Session I would terminate after twenty minutes.

Session II however, was a fictitious event, although Ss were not aware of this. Ss did not actually experience a Session II condition. They only selected the type of Session II condition they preferred to participate in (see Appendix D). This allowed the E to measure the Ss motivation to continue working on the puzzle-task. All instructions to the S were read from a script to control for social interactions.

It was explained to the Ss that the purpose of this experiment was to investigate the effects of "mental distraction" on problem-solving. A more detailed description would be given to each S at the conclusion of the experiment. Ss were then read the different work policies that they had to adhere to while working on the puzzle.

Each S's policy varied depending upon reinforcement condition assignment. Having been pre-selected based upon their work value score, Ss were randomly assigned to one of the experimental treatments. Gender in each cell was controlled by assigning intrinsic and extrinsic males and females proportionately to these conditions.

Ss in the Intrinsic reinforcement condition were reinforced by engaging in a video-display task for two minutes contingent upon locating three words in the puzzle. At the end of the two minute period a bell sounded and the E told the S to resume work on the puzzle. These Ss therefore alternated between performing the puzzle task and the video task for the duration of Session I.

Ss in the Extrinsic reinforcement condition were reinforced by delivery of a token contingent upon locating three words in the puzzle. Each token was redeemable for $.22, as determined from pre-testing as detailed in Section F, part 2. When the token was delivered to the S, the S was instructed to engage in a card-sort activity. This task had received empirical support as a "neutral" activity, being neither rewarding nor punishing in nature. The card-sort activity was the sequential ordering of a batch of randomly

sequenced computer cards. This task was introduced as an activation control in the study and this is elaborated upon in Section F, part 3. Ss were told to perform the card-sort at their own pace. A bell signal instructed the S to discontinue this activity and the E then told the S to resume work on the puzzle task. All instructions to subjects were read from a script to control for social interactions. Ss in the Extrinsic reinforcement condition therefore alternated between working on the puzzle task and performing the card-sort (having received a token) for the duration of Session I.

Ss in the Control reinforcement condition received no reinforcement contingent upon locating three words in the puzzle. Upon finding three words, these Ss were reminded to perform the two-minute card-sort activity previously explained to the them. A bell again signaled the end of this activity and Ss were instructed to resume work on the puzzle task. These Ss therefore, alternated between performing the puzzle task and the card-sort task for the duration of Session I.

Ss in the Control-Extrinsic reinforcement condition, similar to the Extrinsic condition, were reinforced by delivery of a token contingent upon locating three words in the puzzle. The need for this group was explained earlier in Section A regarding the fact that the extrinsic group while controlling for activation with a card-sort, introduced an extraneous task to the reinforcement system. Each token was redeemable for $.22. However, when the token was delivered to the S, the S was instructed to resume work on the puzzle. Ss in the

Control-Extrinsic reinforcement condition worked on the puzzle until a bell signaled the end of Session I. Session I for these Ss lasted 10 minutes to equate the time spent on the task between extrinsic groups. The 10 minutes was the average amount of time spent on the task during pilot study (described in Section E).

Following completion of Session I which terminated automatically by an automatic timer signaling the end of the Session, Ss were told that Session II would soon begin. They were told that Session II would be addressing the effects of "mental distraction" on problem-solving and that only ten more minutes of their time was required. Subjects who were engaged in either the video task or the card-sort task were asked to respond to a Likert-type item at this time. These items were included as manipulation checks in the study and measured either the neutrality of the card-sort or the extent to which the video task was reinforcing (see Section F).

Ss were then informed that, as before, a word puzzle task would be required of them. However, this time they were given the choice of which Session II condition they would prefer to participate in. Specifically, they could select from nine different Session II conditions. Each condition required that a different amount of time be spent working on the word puzzle task. These conditions varied from one minute of work on this task to nine minutes of work on this task. Ss were reminded that the time not spent working on these tasks during Session II would be spent performing alternate "mental distraction" tasks, so that the total time would be 10 minutes

regardless of their choice. The Participation Checklist was administered to each S and was used to indicate the preferred Session II condition. The E then explained that it would take a few minutes to prepare for Session II. Ss were asked to provide their input into a Work Experiment Opinion Survey while they waited for the E to prepare for Session II. Ss were told that their opinions about the experiment would be held in confidence. Their responses were completely anonymous and would be analyzed on a group basis only. Subjects were asked to be frank and honest.

Subsequent to completion of the Work Experiment Opinion Survey and having selected a Session II condition, data collection was complete. At this time the experimenter informed the S of this fact and proceeded with debriefing.

E. Measuring Instruments

A pilot study was run at Baruch College in accordance with the procedures described earlier. Fifty-four percent of these undergraduate subjects were male. The primary purpose of this pilot study was to investigate the reliability of each questionnaire measure and to determine if the experimental induction took effect.

1. Task Satisfaction Scale

A five-point, five-item Likert-type scale was developed to measure the subject's self reported degree of satisfaction with the

experimental task. This Task Satisfaction Scale (TSS) consisted of items such as "The word puzzle tasks were enjoyable" and "As a gift, I would like to receive word puzzles similar to the ones I worked on in the experiment." The TSS revealed a coefficient Alpha of .89 (N=62), supporting the scale's internal-consistency.

This measure was developed for this experiment consistent with the context of the various scales developed in prior research (Daniel & Esser, 1980; Folger et al., 1978; Harackiewicz, 1972; Korman, 1968; Kruglanski et al., 1971, 1972, 1975; Pinder, 1976; Pritchard et al., 1977; Staw et al., 1980; Phillips & Freedman, 1985). The lack of psychometric research on a single task satisfaction scale (or coercion scale or intrinsic motivation scale) is evident by the variability in items used by the mentioned researchers and by review of Robinson and Shaver's (1973) Measures of Social Psychological Attitudes and Shaw and Wright's (1967) Scales for the Measurement of Attitudes.

2. Performance Coercion Scale

A self-report Performance Coercion Scale (PCS) was also developed to measure the extent to which the subject felt "forced," "coerced," or "illegitimately manipulated" by the experimental work arrangement. Again, a five-point, five-item Likert-type scale was used. Items such as; "I did not care for the method used by the experimenter for obtaining my best work efforts" and "I doubt that I would choose to use the work policy chosen by the experimenter if I were the boss" represent the content of the PCS. Based upon results obtained on the

same pilot group responding to the TSS, the reliability of the PCS revealed a coefficient Alpha of .81 (N=62), supporting the scale's internal-consistency. The correlation between the PCS and the TSS was significantly negative as expected r=-.27, (p<.05).

The TSS and PCS scales were randomly dispersed on the Work Experiment Opinion Survey. The Opinion Survey also included five "filler" items intentionally written so as to distract subjects from the Opinion Survey's interest in the two variables; "task satisfaction" and "coercion." The filler items were also randomly placed on the Survey.

3. Intrinsic Motivation

The dependent variable "intrinsic motivation," was measured using a Participation Checklist which instructed the subject to choose the experimental Session II condition preferred (see Procedures Section). This operationalization of intrinsic motivation is consistent with Shaw et al. (1980), Folger et al. (1978), Daniel and Esser (1980), Deci (1971, 1972a,b) and others. These fictitious Session II conditions varied the length of time the S would be required to work on the experimental puzzle task. Conditions ranged from one minute to nine minutes of required time spent working on this task. The pilot group that was run, (N=62), indicated that the intrinsic motivation checklist was significantly positively correlated with the TSS supporting its use in the experiment proper (r=.57, p<.05).

4. Productivity

The dependent variable "productivity" was measured by the number of words identified on the word puzzle task during Session I. A total of 31 words could be identified in the puzzle. The pilot study allowed the investigation of potential problems with time limits and ceiling effects. The pilot data, (N=62), indicated that reinforced subjects completed more tasks than no-reinforcement subjects, suggesting that the experimental period was of adequate duration to yield differences in the experiment proper ($F(2,59)=3.25$, $p<.05$). Overall, the results of pilot testing indicated that the experimental induction took effect on both the behavioral and attitudinal variables.

5. Survey of Work Values

The Survey of Work Values (SWV) (Wollack et al, 1971) was used to assess the subjects' relative extrinsic vs. intrinsic orientation towards work. The 9 items comprising the subscale "Attitude Towards Earning" (Extrinsic) and the 9 items comprising the "Pride in Work" subscale (Intrinsic) were removed from the SWV and administered to Ss prior to commencement of the experiment. Specifically, a S was categorized as Intrinsic or Extrinsic depending upon the difference between the percentile scores on each dimension. Using college student norms (N=3254) developed at Bowling Green State University (1979) each S's standing on each dimension was determined. If there was a difference of at least one quartile between the S's standing on

the dimensions, then the S was assigned the Work Value orientation on the dimension with the greater percentile value. Therefore Ss participating in the experiment had a relatively higher intrinsic or extrinsic work value orientation. It was estimated that approximately 200 Ss would have to be screened to obtain the student sample. The psychometric adequacy of the SWV including construct-related evidence of validity for the subscales is provided by Wollack, Goodale, Wijting & Smith (1971).

The content validity of the items was established by the reallocation method of scaling (Smith & Kendall, 1963). Alpha reliabilities for the "Attitude Towards Earning" (Extrinsic) and "Pride in Work" (Intrinsic) scales were computed based on three samples; industrial workers (N=495), government workers (N=356) and insurance employees (N=66). The coefficient alphas for the Extrinsic scale from these samples were .63, .66, and .65 respectively. The coefficient alphas for the Intrinsic scale from these samples were .63, .61, and .69 respectively.

Wollack et al. (1971) considered these reliabilities satisfactory especially since the number of items in each scale were small. Convergent and divergent evidence of validity obtained from industrial workers for the SWV is shown in Table 1. As can be seen, there is mixed support for the construct validity of the "Pride" and "Involvement" subscales since there was a significant positive correlation between these scales and the "Striving" subscale. With this exception, Table 1 indicates other correlational evidence

demonstrating the expected relationships among the subscales. These subscales are described more fully by Wollack et al. (1971, pp. 332-334).

The measures depicted in Table 1 are herein defined by Wollack et al. (1971, p.332) for interpretive purposes. Extrinsic-type measures were; 1) "Status" which was designed to measure " the effect the job alone has on a person's standing among friends;" 2) "Striving" which was designed to measure "the desire to seek continually higher level jobs;" and 3) "Earnings" which was designed to measure "the value an individual places in making money on the job." Intrinsic-type measures were; 1) "Activity" which was designed to measure "a preference to keep oneself active and busy;" 2) "Pride" which was designed to measure "the value an individual places in working for the sake of doing the job well;" and 3) "Involvement" which was designed to measure "the degree to which a worker takes interest in co-workers and company functions and desires to contribute to job-related decisions." The content-related and construct-related evidence of validity provided by Wollack et al. (1971) supported the use of the "Earnings" and "Pride" SWV subscales.

TABLE 1

Intercorrelations of Extrinsic-type and Intrinsic-type Subscale Totals for the Survey of Work Values

Subscale	Status	Striving	Earnings	Activity	Pride
Status					
Striving	.18*				
Earnings	.27*	.18*			
Activity	.00	.11	-.24*		
Pride	-.06	.14*	-.30*	.60*	
Involvement	.05	.23*	-.19*	.36*	.40*

N=495

*p < .01

F. Pilot Study for Manipulation Checks

The stimulus (video-display task) proposed for use in the experiment to reinforce Ss in the Intrinsic reinforcement condition was investigated prior to the experiment proper in order to determine (1) whether the stimulus would be an "enjoyable activity" to engage in, and (2) exactly "how" enjoyable the activity would be; that is, assess the stimulus' "reward magnitude."

The former was necessary as a manipulation check, ensuring that in fact engaging in this experimental activity would be reinforcing. The latter was necessary in order to control for "quantitative" or "reward

magnitude" differences between the two reinforcement systems. Assessment of the "magnitude" of the reinforcer used in the Intrinsic condition allowed the experimenter to assign equal "magnitude" to the Extrinsic reinforcer, thereby rendering the groups quantitatively but not qualitatively equal.

1. Pleasure Rating

In a separate study, 51 undergraduate students from Baruch College (47% were female) engaged in the video task. This study was run in order to determine if the Intrinsic reinforcement stimulus (video task) was reinforcing.

As would be required in the experiment proper, each S performed the video-display task for two minutes. A two minute interval was chosen by the E as a practical time limit whereby the task would be experienced as pleasurable. To indicate whether the video task had a reinforcing nature, subsequent to engaging in the video task each S responded to a five point (1= strongly disagree, 5= strongly agree) Likert-type item. This item was "The video-display task I just worked on was enjoyable." Ratings on this item supported the reinforcing nature of the video task for use as an intrinsic reinforcer (M=4.21, s.d.=.63, N=51). As a second manipulation check, Ss participating in the experiment proper were also asked to rate the video task on the same Likert-type item. The results were consistent with the pilot results indicating the reinforcing nature of the video task (M=4.07, s.d.=.83, N=27).

2. Reward Magnitude

In order to control for "quantitative differences" between the intrinsic and extrinsic reinforcers used in the experiment, the 51 subjects in the above-mentioned pilot-study were also asked to provide an indication of the reward "value" of the video task. Following the actual performance of the video task and the collection of the pleasure ratings, each S was asked to indicate the amount of money they would be willing to insert into the "video machine" to obtain two minutes of playing time. Subjects made this rating on a checklist with choices ranging from $.01 to $.50.

The mean "reward magnitude" value of the video-display task was $.2236. Tokens delivered to Ss in the Extrinsic reinforcement condition were therefore determined to be redeemable for $.22.

3. Neutral Activity

In order to control for an "activation" explanation of the findings (Scott, 1966), it was necessary to identify an experimental task in which both subjects in the control and extrinsic reinforcement groups could engage. A card-sort task was used for this purpose.

Effects found in the Intrinsic reinforcement condition could otherwise be attributed to merely the performance of an "additional activity" by subjects rather than the operation of the Premack Principle. It was therefore necessary to provide evidence supporting

the contention that this control activity was neither reinforcing nor punishing in nature. This was accomplished by having subjects respond to an item which asked how the subject would feel about performing the card-sort task as a means of "filling-time" while waiting to do something else.

Using a five-point Likert-type scale, the card-sort task received a mean rating of 2.89 with a standard deviation of .74 (N=51), where 3.0 indicated that the task was neither reinforcing nor punishing. Thus, the card-sort task, a "neutral" activity was designed into the experiment to control for activation. A second manipulation check was incorporated into the experiment proper whereby Ss actually engaging in the card-sort activity were asked to rate on a 5 point scale "How enjoyable was the card-sort activity you just worked on?". A rating of 3.0 indicated that the task was neither reinforcing nor punishing. These results also supported the neutrality of the card-sort task (M=3.11, s.d.=.88, N=55).

G. Statistical Analysis

- A priori hypotheses across conditions were tested using planned comparisons ANOVA.

- Specific interactive hypotheses within conditions were tested using planned comparisons ANOVA.

- The psychometric evidence regarding the reliability of both the Task Satisfaction Scale and the Performance Coercion Scale was investigated using Cronbach's Coefficient Alpha Statistic. This serves to replicate the results of pilot research which supported the internal consistency of these scales. These results were reported earlier in Chapter VI.

- Convergent evidence of validity between the behavioral (Intrinsic Motivation) and attitudinal (Task Satisfaction) indices of the subject's orientation towards the work task was investigated using the Pearson-Product Moment Correlation Coefficient.

- It was hypothesized that reinforcement systems would lower task satisfaction and intrinsic motivation. It was also hypothesized that reinforcement systems would increase feelings of being "coerced." Consequently, finding an inverse relationship between coercion and task satisfaction and coercion and intrinsic motivation would lend support to the validity of these measures.

  The Pearson correlation was used to investigate the nature of these relationships.

Chapter VII Results

Relationships Among Attitudinal Dependent Measures

Moderate levels of reliability were obtained for both the "task satisfaction scale" and the "performance coercion scale." The coefficient alphas for the scales (N=120) were .74 and .62, respectively.

It was expected that the three dependent variables, intrinsic motivation, task satisfaction and coercion would correlate in a predictable manner. Table 2 summarizes the relationships among these variables. Specifically, a positive relationship was expected between the attitudinal indices, task satisfaction and intrinsic motivation. Individuals reporting greater task satisfaction were expected to volunteer to repeat this task for a greater duration than individuals reporting less task satisfaction.

An inverse relationship however, was expected between task satisfaction and intrinsic motivation when correlated with coercion. It was expected that the extrinsic reinforcement system would lower task satisfaction and intrinsic motivation while enhancing feelings of coercion. The intrinsic reinforcement condition was expected to increase task satisfaction and intrinsic motivation while minimizing feelings of coercion. Consequently, individuals reporting greater feelings of having been coerced were expected to report lower satisfaction with the experimental task and were expected to volunteer

to continue working on this task for a shorter duration than those individuals reporting lower feelings of having been coerced.

TABLE 2

Correlation Matrix Among Attitudinal Dependent Measures in the Reinforcement Conditions

Dependent Measures	Task Satisfaction	Intrinsic Motivation	Performance Coercion
Task Satisfaction	1.0	.57**	-.08
Intrinsic Motivation		1.0	-.22*

N=90

**p<.01

*p<.05

As was expected, the task satisfaction and intrinsic motivation measures were significantly positively correlated. However, the coercion measure was significantly negatively correlated with the intrinsic motivation measure only.

Productivity

The cell means and standard deviations describing the productivity data are presented below in Table 3.

TABLE 3

Means and Standard Deviations: Productivity

Reinforcement System

Work Value	Intrinsic	Extrinsic	Control	Ctrl.-Ext.	
Intrinsic	M=16.33	16.67	14.07	14.47	15.39
	SD= 2.19	2.35	3.77	1.89	
Extrinsic	15.87	16.53	14.40	16.33	15.78
	2.53	3.23	2.77	3.88	
	16.1	16.6	14.24	15.4	

The two-way ANOVA results presented in Table 4 reveals a significant main effect from the reinforcement systems. No significant effect was found for the work value variable or its interaction with the reinforcement system.

TABLE 4

ANOVA Summary Table: Productivity

Source	df	SS	MS	F
Rf't System	3	93.83	31.28	3.65*
Work Value	1	3.68	3.68	.43
Rf't x WV	3	19.76	6.59	.77
Within	112	959.33	8.57	

*p<.05

The results of the a priori planned comparisons ANOVA are shown in Table 5.

TABLE 5

Planned Comparisons ANOVA Summary Table: Productivity

Source	df	SS	MS	F
Contrasts				
Int Rf't v. Ext Rf't (H1)	1	3.75	3.75	.44
Ext Ss-Ext Rf't v. Int Ss-Ext Rf't (H2a)	1	.15	.15	.02
Int Ss-Int Rf't v. Ext Ss-Int Rf't (H2b)	1	1.59	1.59	.19
Ext Ss-Ext Rf't v. Ext Ss-Int Rf't (H2c)	1	6.53	6.53	.76
Int Ss-Int Rf't v. Int Ss-Ext Rf't (H2d)	1	1.73	1.73	.20
Within	112	959.33	8.57	

Table 5 indicates that the productivity hypotheses were not supported. Subjects in the intrinsically-based reinforcement system did not complete significantly more tasks than subjects in the extrinsically-based reinforcement system (H1). Work value was not found to moderate the effects of either the intrinsically-based or extrinsically-based reinforcement system (H2a, H2b). Also, neither reinforcement system led to greater productivity for either intrinsic or extrinsic subjects (H2c, H2d).

It was of interest to investigate whether the card-sort activity inherent to the extrinsic reinforcement condition affected productivity in comparison to the extrinsic condition without the card-sort. ANOVA indicated that the task performance of subjects in the

control-extrinsic condition did not differ significantly from the task performance of subjects in the extrinsic condition (F [1,112] = 2.52). Planned comparisons ANOVA also revealed that the intrinsically-based reinforcement system led to the completion of significantly more tasks than the control condition (F [1,112] = 7.32, $p<.01$) suggesting that while there was no difference between reinforcement conditions, the intrinsically-based system did enhance task performance in comparison to the no-reinforcement control. The reinforcing effect of the token condition was evident by comparisons ANOVA yielding a significant difference between the productivity of this group and the control group (F [1,112] = 9.79, $p<.01$).

In sum, no support was found for the hypotheses addressing the behavioral benefits to be realized by employment of an intrinsically-based reinforcement system instead of an extrinsically-based reinforcement system. Moreover, the effects of reinforcement systems on productivity were not found to be moderated by personal work values. When personal work orientation was controlled, no significant difference between productivity in either the intrinsic or extrinsic reinforcement condition was found. Therefore, no support for hypotheses addressing the positive behavioral benefits to be obtained when reinforcement systems and personal work values are compatible was obtained in this research.

Task Satisfaction

The cell means and standard deviations describing the task satisfaction data appear in Table 6.

TABLE 6

Means and Standard Deviations: Task Satisfaction

Work Value	Reinforcement System: Intrinsic	Extrinsic	Control	Ctrl.-Ext.	
Intrinsic	M=15.80	14.20	14.93	14.40	14.83
	SD= 3.95	3.32	3.45	3.10	
Extrinsic	16.00	12.93	13.67	13.73	14.08
	3.16	1.67	3.31	14.07	
	15.90	13.57	14.30	14.07	

The two-way ANOVA performed revealed a main effect on the reinforcement system variable. No significant effect however was found for the work value variable. In addition, no significant interaction between the reinforcement system variable and the personal work value variable was found. These results appear in Table 7.

TABLE 7

ANOVA Summary Table: Task Satisfaction

Source	df	SS	MS	F
Rf't Syst.	3	94.13	31.38	2.81*
Work Value	1	14.70	14.70	1.32
Rf't x WV	3	11.30	3.77	.34
Within	112	1249.33	11.15	

*p<.05

The results presented in Table 8 support hypothesis #3 which asserts that the intrinsically-based reinforcement system would have more positive effect on task satisfaction than the extrinsically-based reinforcement system. However, while it was also expected that reinforcement of any sort would negatively impact on task satisfaction, no support was found for this prediction (H4).

TABLE 8

Planned Comparisons ANOVA Summary Table: Task Satisfaction

Source	df	SS	MS	F
Contrasts				
Int Rf't v. Ext Rf't (H3)	1	81.78	81.78	7.33**
Rf't v. Ctrl (H4)	1	3.74	3.74	.34
Ext Ss-Ext Rf't v. Int Ss-Ext Rf't (H5a)	1	12.10	12.10	1.09
Int Ss-Int Rf't v. Ext Ss-Int Rf't (H5c)	1	.30	.30	.03
Ext Ss-Int Rf't v. Ext Ss-Ext Rf't (H6a)	1	70.69	70.69	6.34*
Int Ss-Int Rf't v. Int Ss-Ext Rf't (H6c)	1	19.20	19.20	1.72
Within	112	1249.33	11.15	

**p<.01

*p<.05

It was expected that extrinsically-oriented subjects would report lower task satisfaction than intrinsically-oriented subjects when placed in a given reinforcement system (H5a, H5c). The data in Table 8 however did not reveal such an effect.

When personal work orientation was controlled, it was expected that the extrinsically-based reinforcement system would lower reported task satisfaction in comparison to the intrinsically-based system. The results on this however, were mixed. This effect was found for extrinsically-oriented subjects (H6a), but was not found for intrinsically-oriented subjects (H6c).

Additional analyses were performed to compare the control-extrinsic results to the extrinsic group. As would be expected, no significant difference in reported task satisfaction was found between these two conditions which were exactly the same except for the card-sort activity $F\ (1,112) = .34$. The card-sort activity was not found to have influenced the task satisfaction of subjects in the extrinsic condition.

In sum, the results on the task satisfaction variable were mixed. As was expected, the extrinsic reinforcement system was found to have negatively affected reported task satisfaction in comparison to the intrinsic reinforcement system. However, negative effects produced by reinforcement in comparison to controls were not found. When the personal work value variable was controlled, there was mixed support for the effect that extrinsic reinforcement would impact negatively on

task satisfaction in comparison to intrinsic reinforcement. Support for such an effect was evidenced for extrinsically-oriented subjects only.

Intrinsic Motivation

The cell means and standard deviations describing the intrinsic motivation data appear below in Table 9.

TABLE 9

Means and Standard Deviations: Intrinsic Motivation

Reinforcement System

Work Value	Intrinsic	Extrinsic	Control	Ctrl.-Ext.	
Intrinsic	M=5.60	4.93	5.13	4.80	5.12
	SD=2.13	1.16	2.13	1.92	
Extrinsic	5.93	4.00	4.73	4.67	4.83
	1.79	1.36	2.05	.86	
	5.77	4.47	4.93	4.74	

Table 10 presents the results of a two-way ANOVA. These results indicated the presence of a main effect from the reinforcement system variable. No significant effect was found for the personal work value variable. There was no significant interaction.

TABLE 10

ANOVA Summary Table: Intrinsic Motivation

Source	df	SS	MS	F
Rf't Syst.	3	30.03	10.01	3.17*
Work Value	1	3.33	3.33	1.05
Rf't x WV	3	6.07	2.02	.64
Within	112	354.27	3.16	

*p<.05

Results on the intrinsic motivation variable paralleled the task satisfaction results. Table 11 presents the planned comparisons results for this variable. Subjects reinforced by an intrinsically-based system demonstrated greater intrinsic motivation than subjects reinforced by the extrinsically-based system (H3a). No signficant difference was obtained when reinforcement groups were compared to controls on this variable (H4a). Hypotheses concerning the moderating effects of personal work values within a reinforcement system were not supported (H5b, H5d). Consistent with the task satisfaction findings, mixed results were obtained regarding the hypotheses concerning the negative effects produced by the extrinsic reinforcement system in comparison to the intrinsic reinforcement system when the personal work value variable was controlled. The effect was found for extrinsically-oriented subjects (H6b), but not found for intrinsically-oriented subjects (H6d).

TABLE 11

Planned Comparisons ANOVA Summary Table: Intrinsic Motivation

Source	df	SS	MS	F
Contrasts				
Int Rf't v. Ext Rf't (H3a)	1	25.35	25.35	8.02*
Rf't v. Ctrl. (H4a)	1	.68	.68	.22
Ext Ss-Ext Rf't v. Int Ss-Ext Rf't (H5b)	1	6.49	6.49	2.05
Int Ss-Int Rf't v. Ext Ss-Int Rf't (H5d)	1	.82	.82	.26
Ext Ss-Int Rf't v. Ext Ss-Ext Rf't (H6b)	1	27.94	27.94	8.84*
Int Ss-Int Rf't v. Int Ss-Ext Rf't (H6d)	1	3.37	3.37	1.07
Within	112	354.27	3.16	

*p<.01

The data were also analyzed to detect differences between the extrinsic and control-extrinsic conditions. These groups were not expected to differ. A planned comparisons ANOVA test did not reveal a significant difference between these groups on this variable F (1,112) = .35.

Summarizing the intrinsic motivation findings, the results were consistent with the task satisfaction findings. Whereas neither the intrinsic nor extrinsic reward conditions were found to significantly affect intrinsic motivation in comparison to controls, there was a significant difference between these two reinforcement systems. Subjects experiencing the intrinsic reward condition demonstrated greater intrinsic motivation than subjects experiencing the extrinsic reward condition. This effect however was expected to hold for both

intrinsically-oriented and extrinsically-oriented subjects. The data revealed that only extrinsically-oriented subjects demonstrated significantly less intrinsic motivation subsequent to reinforcement by the extrinsically-based (token) system. Intrinsically-oriented subjects did not differ in their response to the reinforcement systems. As was found on the task satisfaction dependent variable, the response of intrinsic motivation was not significantly different for extrinsic versus intrinsic subjects experiencing either type of reinforcement system.

Coercion

The cell means and standard deviations describing the coercion data are presented in Table 12.

TABLE 12

Means and Standard Deviations: Coercion

		Reinforcement System				
		Intrinsic	Extrinsic	Control	Ctrl.-Ext.	
Work Value	Intrinsic	M=14.20 SD= 3.78	15.40 3.56	14.60 2.56	15.53 3.46	14.93
	Extrinsic	13.33 3.60	13.93 3.69	14.20 2.62	14.13 2.98	13.90
		13.77	14.67	14.40	14.83	

The results of a two-way ANOVA appear in Table 13. No significant main effects or interactions were found.

TABLE 13

ANOVA Summary Table: Coercion

Source	df	SS	MS	F
Rf't Syst.	3	19.77	6.59	.59
Work Value	1	32.03	32.03	2.86
Rf't x WV	3	5.63	1.88	.92
Within	112	1255.73	11.21	

The a priori hypotheses addressing the effects of reinforcement systems on feelings of "coercion" were not supported. Statistically significant differences between reinforcement systems on the coercion variable and effects within systems using the work value variable as a moderator were not found. When the work value variable was controlled, differences between the reinforcement system's effects on coercion were not found for either intrinsic or extrinsic subjects. These results are presented in Table 14.

TABLE 14

Planned Comparisons ANOVA: Coercion

Source	df	SS	MS	F
Contrasts				
Rf't v. Ctrl (H7)	1	.68	.68	.06
Ext Rf't v. Int Rf't (H8)	1	1.05	1.05	.09
Int Ss-Ext Rf't v. Ext Ss-Ext Rf't (H9a)	1	16.21	16.21	1.45
Ext Ss-Int Rf't v. Int Ss-Int Rf't (H9b)	1	5.68	5.68	.51
Int Ss-Int Rf't v. Int Ss-Ext Rf't (H9c)	1	10.80	10.80	.91
Ext Ss-Ext Rf't v. Ext Ss-Int Rf't (H9d)	1	2.70	2.70	.24
Within	112	1255.73	11.21	

The results on the performance coercion variable indicated that the experiment did not produce a differential impact on subjects' "feeling of coercion" (H7, H8). Personal work value did not moderate subjects' attitudinal response to either the intrinsically-based or extrinsically-based system (H9a, H9b). The data indicated that neither intrinsic nor extrinsic subjects differed in their response to the qualitative differences between the reinforcement systems (H9c, H9d).

Chapter VIII Discussion

This research investigated the effects of a Premack-based and token-based reinforcement system on the variables: productivity, task satisfaction, intrinsic motivation and the feeling of having been coerced. Overall, the findings in this research demonstrated that a Premack-based reinforcement system improved productivity in comparison to a no-reinforcement condition. Extrinsically-oriented subjects responded more negatively to the token-based than the Premack-based reinforcement system on both attitudinal variables. No significant findings were obtained on the coercion variable.

The major finding on the productivity variable was that subjects reinforced by the performance of an enjoyable behavior (Premack-based reinforcement) completed significantly more tasks than subjects not reinforced. It was also found that the extrinsic (token) reinforcement system led to the completion of significantly more tasks than the no-reinforcement condition. When task performance in the Premack-based and extrinsic reinforcement system were compared, no significant difference was found. The latter finding may be attributable to the fact that the reward magnitude between the reinforcement systems was controlled.

As was predicted on the attitudinal variables, subjects reinforced by the intrinsic reinforcer (video task) reported greater task satisfaction and intrinsic motivation than subjects reinforced by the extrinsic reinforcer (token). In addition, having dichotomized

subjects as either extrinsic or intrinsic in work orientation, the work value variable was held constant to determine if both intrinsically-oriented and extrinsically-oriented subjects reacted more negatively to the high-salient, token condition than the less-salient intrinsic (Premack) condition. Again, it was expected that differences in the nature of the reinforcer would affect both intrinsic and extrinsic subjects similarly. However, the data revealed that only extrinsically-oriented subjects reacted more negatively to the high-salient extrinsic (token) consequence in comparison to the less-salient intrinsic (behavior) consequence. There was no significant difference between the intrinsically-oriented subjects' attitudinal reactions to the extrinsic versus intrinsic reinforcement system.

It was also expected that the work values of the subjects would moderate the effect that the reinforcer would have on task attitudes. Specifically, since extrinsically-oriented subjects are "contingency-oriented" (being more likely, by definition, to attribute task performance to the contingent consequence) these subjects were expected to react more negatively to a reinforcement system than intrinsically-oriented subjects. However, the findings here indicated that intrinsic and extrinsic subjects were not significantly different in their reactions to either the video task or the token as the reinforcing consequence. The work value variable did not moderate reactions to the reinforcing consequences.

The last variable investigated was coercion. The employment of operant-based paradigms in industrial/organizational settings involve ethical issues surrounding the control of individuals (Bandura, 1969; Whyte, 1972; Argyris, 1971, and others). It was expected that subjects would perceive being reinforced by a behavior as legitimate and consequently would feel less coerced than subjects reinforced by the illegitimate token. No significant difference however between these groups was obtained on this variable.

The legitimacy of the different reinforcement systems was also expected to be a function of the compatability between the method by which the subject was influenced (intrinsic or extrinsic reinforcer) and the values the subject holds regarding legitimate ways of influencing workers. Where the subject's work value and the method of influence (reinforcement system) "fit" or were compatible, it was expected that the feeling of having been coerced would be minimal. However, the results did not indicate that compatability between work values and the nature of the reinforcement system minimized the feeling of having been coerced.

The implications of these findings present the Premack Principle as a potential managerial alternative to the extrinsic reinforcement system. A Premack reinforcement system increases the frequency of a specific behavior through an operant paradigm whereby the effects of the reinforcing stimulus are achieved through the activity of the subject. The consequence is therefore a "self-generated" reinforcer being defined in this research as an enjoyable task. Consequently, it

was predicted that a reinforcement system utilizing a "self-generated" stimulus as a reinforcer would not be "salient" to the subject and thus negative attitudinal responses would be avoided (Kruglanski et al., 1975a,b,c; Staw et al., 1980; Phillips & Lord, 1980).

Indeed, both the task satisfaction and intrinsic motivation of subjects reinforced by the Premack-based method (intrinsic system) were more favorable than the task satisfaction and intrinsic motivation of subjects reinforced by the extrinsic-token method. The results also supported the hypothesis that a behavior can be used to reinforce other behavior in accordance with the Premack Principle. From an attitudinal perspective then, an intrinsically-based system is preferable to an extrinsically-based system. From a behavioral perspective, an intrinsic reinforcement system affects productivity in an organizationally desirable manner. Work behavior can therefore be reinforced and work attitudes can be enhanced by the managerial application of the Premack Principle.

The phenomenon whereby behavior acts to reinforce other behavior has only been investigated once before with industrial/organizational applications in mind (Gupton & LeBow, 1971). Gupton and LeBow (1971) extended the Premack Principle to a work setting but unfortunately did not adapt this principle, which is based upon the behavior of rats, to organizational behavior. Specifically, these investigators interpreted literally Premack's notion. In accordance with Premack's methodology, Gupton and LeBow (1971) defined a reinforcing behavior on the basis of its frequency of occurrence. This researcher however

applied Premack's notion realizing that the frequency with which a task is performed in the work setting is not a reliable way of identifying a reinforcing behavior because workers are not free to act as they choose. Whereas the behavior of rats in a laboratory setting is unconstrained, the behavior of workers in a work setting is constrained. Consequently, the identification of reinforcing work behavior requires a criterion other than "frequency." Therefore, in this research, the experimenter designed an enriched task and applied it in accordance with Premack's operant paradigm.

Another problem with Gupton and LeBow's (1971) study was their neglect to include attitudinal dependent variables. Like other researchers utilizing the Premack Principle to control behavior in educational and clinical settings (Mitchell, 1973; Kane & Gantzer, 1977; Hosi, 1974), dependent variables have remained limited to observable behavior. Gupton and LeBow's (1971) study had its limitations due to methodological problems inherent in its design. However, it is important to note that these investigators opened industrial/organizational psychology to a new area of investigation. Unfortunately, industrial/organizational psychologists did not respond to this research as a significant work and consequently the field did not pursue the Premack Principle.

The literature indicates a paucity of research in either laboratory or field settings addressing the potential role of the Premack Principle in industrial/organizational psychology. This laboratory simulation has demonstrated that behavior employed as a

consequence in an operant paradigm effects task performance. Moreover, such a contingency has the advantage of enhancing task performance by a "legitimate," low-salient means. Consequently, negative effects on attitudes towards the task were minimized by this low-salient reinforcement system in comparison to a high-salient token-based reinforcement system.

Phillips and Freedman (1985) agreed that participant reactions to extrinsic reinforcement systems require investigation:

> ... there may be important individual differences associated with task participants' reactions to extrinsic incentives. [There is a need] to understand why and how people interpret the presence of such rewards if we are to more fully explain the relationship between [extrinsic systems] and intrinsic task interest (p. 312).

Extending the work of Phillips and Freedman (1985), this research focused not only on reactions to an extrinsic system but also reactions to an intrinsic system. The role of the "salience" of the consequence was addressed in this experiment to aid our understanding of how subjects respond to qualitatively different reinforcement systems. The experimental-social psychological literature reviewed has indicated that high-salient consequences are associated with negative effects on task satisfaction and intrinsic motivation (McGraw

& McCullers, 1975; Ross, 1975; Lepper & Greene, 1975; Lepper et al., 1973).

Procedurally, in this study the high salient reinforcer was operationalized as an extrinsic or token-based system and the low-salient reinforcer was operationalized as an intrinsic or behavior-based system. Also, since individuals holding extrinsic work values are "contingency-oriented" by definition, these subjects were expected to attribute greater salience to a consequence than individuals holding intrinsic work values. Thus, this experiment investigated the importance of the "salience" of the consequence by means of two factors. One means was through manipulation of the nature of the reinforcement system itself and the other means was through the dichotomization of subjects based upon their personal work values.

Overall, high-salient (extrinsic) and low-salient (Premack-based) reinforcement systems affected attitudes towards the task in the predicted manner. This effect however was significant for only extrinsically-oriented subjects. Intrinsically-oriented subjects did not differ in their reported attitudes to the reinforcement systems.

The task satisfaction and intrinsic motivation of intrinsically-oriented and extrinsically-oriented subjects were also compared within each reinforcement system. There was no significant difference between the intrinsic and extrinsically-oriented subjects reinforced by the token-based system. Similarly, no significant difference was found on these dependent variables when intrinsic and extrinsically-

oriented subjects reinforced by the Premack-based system were compared.

It was expected that subjects with relatively higher extrinsic than intrinsic work values would attribute their task performance to the "consequence" (rather than the task itself) thereby reducing task satisfaction and intrinsic motivation (Phillips & Freedman, 1985). Within the reinforcement systems, extrinsically-oriented subjects did not report significantly lower task satisfaction or demonstrate significantly less intrinsic motivation than intrinsically-oriented subjects. This is not consistent with Phillips and Freedman's (1985) results in which extrinsic subjects reported lower task satisfaction than intrinsic subjects subsequent to contingent reinforcement. The comparison to the Phillips and Freedman (1985) study however is not tenable because there are significant methodological differences between these studies.

The subjects in the Phillips and Freedman (1985) study received an instructional set emphasizing that their task performance was part of an employment situation. This experimenter did not emphasize to subjects that task performance during the experiment was part of an "employment" situation. The context in which these studies were conducted is consequently very much different. Also, the extrinsic system in the Phillips and Freedman study was based on a qualitative evaluation of task performance whereas this study operationalized the quantitative feature of task performance. In addition, it is not clear whether the Phillips and Freedman study incorporated "work time"

into their reinforcement system or whether subjects terminated their work activity on their own upon completion of their work task. In this experiment subjects worked in accordance with specific work intervals as dictated by the experimenter. Finally, the work task used in this experiment and the Phillips and Freedman (1985) study were different. Specifically, the work task operationalized as the word-search puzzle in this research was qualitatively more cognitively challenging than the work task utilized by Phillips and Freedman (1985) which was operationalized as a proofreading acitivity. Thus, it is not certain whether the work value variable failed to moderate the effects of the reinforcement system through its influence on the salience of the consequence in this research or whether the lack of this finding in the present study reflects methodological differences between this research and the Phillips and Freedman (1985) study.

Future researchers should consider alternative operationalizations for the work value variable. In this study subjects were dichotomized on the work value variable using the Survey of Work Values (Wollack et al., 1971). Moderating effects associated with personal work values may have been found by increasing the minimally acceptable percentile difference between the scores on the work values scales; thereby yielding a sample that is "more" extrinsically or intrinsically-oriented. Such a sample however, would be difficult to obtain. The work value constructs are not mutually exclusive, in fact only a moderately negative correlation has been found between them (Wollack et al., 1971). More importantly, any results found on such a sample would not be generalizable to the

working population since by definition, the results would be based upon individuals with extraordinary work values. Future investigators choosing to increase the difference between the intrinsic and extrinsic work value orientation of subjects will therefore have to temper their generalizations.

Both intrinsically-oriented and extrinsically-oriented subjects were expected to react more negatively to the high-salient reinforcement system (token) than the low-salient reinforcement system (Premack-behavior) (Levine & Fasnacht, 1974; Hamner & Foster, 1975; Farr, 1976; Kruglanski, 1975a,b,c; Ross, 1975; Pinder, 1976). This hypothesis addressed the reinforcement system as the determinant of the salience of the consequence. The detrimental effects associated with the high-salient consequence (extrinsic system) on attitudes towards a task were found for extrinsically-oriented subjects only. This effect was not significant for intrinsically-oriented subjects. This would suggest that intrinsically-oriented workers (not being sensitive to task performance as a means to an end), are "immune" to the consequence as a stimulus which invokes attribution of one's work behavior onto external explanations and hence do not develop negative attitudes towards the task. The implication for organizations is that since intrinsic workers did not react differently to the Premack-based versus the token-based system and since extrinsic workers reacted more negatively to the token-based system, the choice is clear. Organizations can minimize the occurrence of the development of undermining worker attitudes by redirecting their operant-based programs towards the application of the Premack Principle.

The problem of coercion in industry has been associated with reinforcement systems. The application of a specific consequence contingent upon the exhibition of an objective, defined behavior by organizations has been (and will likely continue to be) criticized as a manipulative, coercive act (Luthans & Kreitner, 1975; Argyris, 1971; Whyte, 1972; Babb & Kopp, 1978). This study found no significant difference between subjects experiencing a reinforcement paradigm and subjects not experiencing a reinforcement paradigm on the coercion variable. Also, no significant difference was found when the intrinsic and extrinsic reinforcement systems were compared regarding their impact on feeling coerced. In addition, the work value variable did not moderate reactions to the reinforcement systems.

These findings may be attributable to one or more factors present in the research design. Since the subject pool was comprised of volunteers it may have been difficult for them to perceive the situation as coercive in nature. Another possibility is that subjects responded to the authoritative instructional set of the experimenter primarily and not the nature of their reinforcer. Also, the task performed by subjects may have been part of the problem. The work-task used in this study, being a word-search puzzle, may have been too "game-like" to be perceived as a work task. Consequently, this would not be conducive to subjects perceiving their work on this task as an activity that was forced onto them. It should also be mentioned that the lack of any findings on the coercion variable may reflect a problem in the sensitivity of the instrument used to measure this variable. Despite the lack of any significant differences

between groups on the coercion variable, it is important to note that reinforcement systems have been described as coercive and that issues concerning the ethical control of behavior are present in the literature (Bandura, 1969; Argyris, 1971; Whyte, 1972; Luthans & Kreitner, 1975; Craighead et al., 1976).

Perhaps these criticisms are apparent because reinforcement programs in organizational settings are more offensive to the "observers" (and not the participants) of such programs. This is an assertion that awaits investigation. Researchers are encouraged to investigate participant and observer perceptions of reinforcement in terms of their coercive nature. Although this research provided no empirical support for the hypothesis that participants of a reinforcement program feel coerced; the nature of the Premack-based program will likely be more acceptable to a managerial population than the token-based program. This acceptability will stem from the fact that organizations can use the Premack Principle to control workers (reinforce work behavior) through proactive manipulation of task contingencies. Simply put, behavior will be used to reinforce other behavior. In such a paradigm, the participant's reinforcer is "self-generated," being inherent in the reinforcing activity. Control is therefore accomplished through the worker's own behavior and not through the delivery of a reinforcer from an external source. In essence, the individual is viewed as being in control of oneself rather than being controlled by an other.

The Premack Principle can be applied to an industrial/organizational setting in a variety of ways. The use of the Premack approach requires the identification (or creation) of personally satisfying job tasks. These tasks can then be made contingent upon the performance of other desirable behavior. Industrial/organizational psychology has already explored the notion of designing satisfying job tasks (Oldham & Hackman, 1980). The Premack Principle can be combined with the job enrichment approach to motivation. Both methods emphasize the nature of the worker's activity as the means by which productivity and positive work attitudes are realized. The Premack Principle simply goes one step further than the job enrichment approach by rearranging enriched tasks in accordance with fundamental operant psychology. Specifically, the performance of enriched tasks are made contingent upon the performance of other behavior. Behavior modification accomplished by such a method becomes nothing more than work rearrangement; where enriched work tasks serve to reinforce less challenging work activities.

The redesign of work in accordance with job enrichment in order to improve work behavior and work attitudes has not been without its problems of application (Luthans & Reif, 1974; Aldag & Brief, 1979; Hackman & Lawler, 1971; Hackman & Oldham, 1976; Turner & Lawrence, 1965; and others). When combined with the Premack Principle however, the job enrichment approach emphasizes the use of work behavior as reinforcement. If the nature of the work itself is reinforcing, then it can be used as a consequence in an operant paradigm. The effectiveness of an operant paradigm whereby reinforcing behaviors

enhance the performance of other behaviors was established in the animal literature by David Premack (1959; 1963a,b) and in the industrial literature by Gupton & LeBow (1971). The job enrichment literature provides industrial/organizational practitioners a foundation for establishing reinforcing work behavior. The Premack Principle provides managerial guidance for the use of this enriched behavior in order to impact positively on other work tasks. By combining job enrichment's motivation through the work itself with operant psychology's behavioral control through the Premack Principle, the management of work behavior becomes the arrangement of task contingencies.

This research has demonstrated that a Premack managerial approach favorably impacts on attitudes and behavior in comparison to an extrinsic reinforcement method for extrinsically-oriented subjects. This promises to provide organizations an ethical means of employing operant psychology. However, is the deliberate use of an operant strategy that is designed to minimize ethical confrontation (while still capitalizing on "managing" through positive reinforcement) an ethical practice? That is, is the use of the Premack Principle an ethical means of avoiding ethical criticism? Clearly, psychologists involved with the management of individuals in organizational settings must address this issue when applying a Premack-based approach.

In addition, there is a growing interest in the effects of behavioral methods on the psychologist using these methods (Andreassi, personal communication, 1987). Kipnis (1987), following a review of

suggestive evidence in this regard, concluded: "... The use of behavioral technology has the potential to change the influencing agent's behavior, as well as the behavior of the target person." (p. 35).

Kipnis (1987) elaborated upon what he called the "metamorphic" effects of power:

> ... the behavior of the target person, no matter how excellent, is seen as guided by the powerholder's orders rather than by the abilities and motivations of the target person. Hence the target person is not given full credit for anything he or she does... we seldom treat as equals or actively seek the company of persons who are seen as not being in control of their own behavior (p. 32).

Kipnis explained that this metamorphosis is likely found in power situations where "external forces" (reinforcement) can explain the target person's behavior. The Premack Principle however relies on "internal forces" or as I referred to them earlier, "self-generated" reinforcers to influence behavior. The Premack approach is a system of natural reinforcement task hierarchies where higher order behaviors reinforce lower order behaviors. The "forces" or reinforcing stimuli that are operative in the Premack Principle are "internal," specifically being the target person's very own behaviors.

Behavioral control through the Premack Principle is a technology of self-control. Consequently, psychologists may be able to avoid the metamorphic effects of power by focusing on the study and use of this neglected operant principle.

Future investigators are also encouraged to address issues concerning the process by which reinforcement systems are designed and installed. Will participation in the design of a reinforcement program enhance its effect on behavior? Will negative attitudes towards the reinforced task be found when workers are directly involved in the design of the program? How will unions react to Premack-based versus token-based reinforcement paradigms? There are many unanswered questions regarding the application of the Premack Principle. Hopefully, this research has encouraged applied researchers to begin serious investigation into organizational applications of this principle.

This research has not provided conclusive support for the selection of an intrinsic instead of an extrinsic reinforcement system based upon the productivity data. However, both types of reinforcement systems did improve productivity over no reinforcement controls. The attitudinal data provided an additional perspective. The intrinsic (or Premack-based) reinforcement system was associated with less negative effects on attitudes towards the task than the extrinsic reinforcement system. This effect however was significant only for extrinsically-oriented subjects. Intrinsically-oriented subjects did not react differently to the reinforcement systems.

Thus, whereas behaviorally neither reinforcement system had a more favorable effect on task performance; attitudinally, the negative effects associated with reinforcement systems can be minimized for some people by application of the Premack Principle. Finally, the issue of control was addressed by this research. Neither reinforcement system minimized the reported feeling of having been coerced and the work values of the subjects did not moderate this effect. The study therefore did not support minimizing participant feelings of having been coerced through the use of the Premack Principle. However, it was suggested that such paradigms would be accepted as a legitimate means for organizations to influence work behavior since behavior itself is used to control other behavior.

This research has extended the Premack Principle from the animal literature to an industrial/organizational framework. As a result, behavior modifiers in organizational settings are provided a potential alternative to the extrinsic reinforcement system. A Premack-based reinforcement system promises to enhance productivity while minimizing the development of the undermining negative work attitudes typically associated with extrinsic reinforcement systems. It is hoped that future field research will begin to address industrial/organizational applications of the Premack Principle as it may lead to new directions for Organizational Behavior Modification.

Appendix A

The Work Value Questionnaire

- INSTRUCTIONS -

Before we begin, please tell us how you feel about "working" in general by providing ratings on the enclosed 18 items. Of course, everyone has their own opinion about work and so there are no "right" or "wrong" answers.

Please use the rating sheet provided to indicate the extent to which you agree or disagree with each of the 18 items. Follow the example below:

Example:

People have different feelings about work.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	

In the example, the respondent strongly agreed that people differ in how they view work and so completely blackened the "5" in the answer sheet to indicate this. Please be sure to answer each of the 18 items.

Your ratings are completely confidential. Please do NOT sign your name. Remember that there are no "correct" answers and that you are assured anonymity so please be frank and honest.

Attitude Towards Work

1. A person should hold a second job to bring in extra money if the person can get it.

2. One who does a sloppy job at work should feel a little ashamed of oneself.

3. A worker should feel some responsibility to do a decent job, whether or not the supervisor is around.

4. A person should choose the job which pays the most.

5. There is nothing wrong with doing a poor job if one can get away with it.

6. If I were paid by the hour, I would probably turn down most offers to make extra money by working overtime.

7. A person should take the job which offers the most overtime if the regular pay on the jobs is about the same.

8. A person should choose one job over another mostly because of the higher wages.

9. There is nothing as satisfying as doing the best job possible.

10. The only good part of most jobs is the paycheck.

11. One who feels no sense of pride in one's work is probably unhappy.

12. Only a fool worries about doing a job well, since it is important only that you do your job well enough not to get fired.

13. When someone is looking for a job, money should not be the most important consideration.

14. A good job is a well paying job.

15. One should feel a sense of pride in one's work.

16. A person should take a job that pays more than some other job even if that person cannot stand other workers on the job.

17. The most important thing about a job is liking the work.

18. Doing a good job should mean as much to a worker as a good paycheck.

RATING SHEET

Item	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1.	1	2	3	4	5
2.	1	2	3	4	5
3.	1	2	3	4	5
4.	1	2	3	4	5
5.	1	2	3	4	5
6.	1	2	3	4	5
7.	1	2	3	4	5
8.	1	2	3	4	5
9.	1	2	3	4	5
10.	1	2	3	4	5
11.	1	2	3	4	5
12.	1	2	3	4	5
13.	1	2	3	4	5
14.	1	2	3	4	5
15.	1	2	3	4	5
16.	1	2	3	4	5
17.	1	2	3	4	5
18.	1	2	3	4	5

Appendix B

Experimenter Instructions

EXPERIMENTAL SCRIPT: FOR THE RUNNING OF SUBJECTS

CONTENTS

EXPERIMENTER INSTRUCTIONS

Thank you for agreeing to participate in this experiment. Have you spoken with anyone who has already participated in this experiment, or have you heard about it? (If yes, exclude). It is designed to tell us more about people's ability to solve problems at work when occasionally distracted by other demands. As you know, the work world requires this of us every day.

The experiment will last a total of 30 minutes and will consist of a Session I and a Session II. We will start with Session I which will last 20 minutes. During Session I you will be asked to perform a word-search puzzle task while following a specific work policy. I will be present to make sure that this policy is understood and to remind you as to what you are supposed to be doing during this experiment.

There are several options for Session II of the experiment. At the completion of Session I, you will be provided a choice of which Session II you'd like to participate in. A more detailed description of your Session II choices will be given to you later.

- -

Read appropriate instructions that follow

depending upon subject's assignment

INSTRUCTIONS FOR: EXTRINSIC REINFORCEMENT CONDITION (TOKEN)

In front of you is a word-search puzzle. You are required to work on this puzzle as your work task. When you locate a word, circle it in the puzzle and then cross the word out in the list below the puzzle. As you work on the puzzle you will be stopped every time you locate three words. At that time you will be given a token (show one to Subject) which is redeemable for $.22 at the end of the experiment.

When you are given the token you will be told to perform a different task for two minutes. Since we are interested in learning more about people's problem-solving ability when distracted by other tasks, we ask that during this two minute interval you place these computer cards (show Subject) into numerical sequence. They are now in random order. There is no specific number of cards that you have to sort so just work at a comfortable pace for the duration of the two minutes. The identification number of each card is written in the right-hand corner of each card.

When this two minute interval is over, you will be told and will then be requested to continue your work on the word-search puzzle. Again, you will recieve a token after you locate another three words. You will alternate between tasks in this manner for the duration of Session I.

Do you have any questions?

I will supervise you as you work to make certain that you follow the instructions I just described. Please get ready to begin working on the puzzle.

You may begin.

INSTRUCTIONS FOR: INTRINSIC REINFORCEMENT CONDITION (PREMACK)

In front of you is a word-search puzzle. You are required to work on this puzzle as your work task. When you locate a word, you will circle it in the puzzle and then cross the word out in the list below the puzzle. As you work on the puzzle you will be stopped every time you locate three words. At that time you will be instructed to perform the video-display task you see here. The video-display is simple to operate. Watch me. Now you try it. (Demonstrate operation and allow S to manipulate.)

Since we are interested in learning more about people's problem-solving abilities when distracted by other tasks, we ask you to operate this video equipment for two minutes. You will be told when to begin and when to stop. We do not care how well you perform; simply continue operating the video until told to stop. You will alternate between the word-search task and the video task in this manner for the duration of Session I.

Do you have any questions?

I will supervise you as you work to make certain that you follow the instructions I just described. Please get ready to begin working on the puzzle.

You may begin.

INSTRUCTIONS FOR CONTROL-EXTRINSIC REINFORCEMENT CONDITION

In front of you is a word-search puzzle. You are required to work on this puzzle as your work task. When you locate a word, circle it in the puzzle and then cross the word out in the list below the puzzle. As you work on the puzzle you will be stopped every time you locate three words. At that time you will be given a token (show one to Subject) which is redeemable for $.22 at the end of the experiment.

You will then be requested to continue your work on the word-search puzzle. Again, you will receive a token after you locate another three words. You will alternate in this manner for the duration of Session I.

Do you have any questions?

I will supervise you as you work to make certain that you follow the instructions I just described. Please get ready to begin working on the puzzle.

You may begin.

INSTRUCTIONS FOR: CONTROL CONDITION (NO REINFORCEMENT)

In front of you is a word-search puzzle. You are required to work on this puzzle as your work task. When you locate a word, circle it in the puzzle and then cross the word out in the list below the puzzle. As you work on the puzzle you will be stopped every time you locate three words.

Since we are interested in learning more about people's problem-solving abilities when distracted by other tasks, every time you locate three words you will be instructed to place these computer cards into numerical sequence for two minutes. Then I will instruct you to resume work on the puzzle. There is no specific number of cards that you have to sort so just work at a comfortable pace for the duration of the two minutes. The identification number of each card is written in the right-hand corner of each card.

You will alternate between the word-search puzzle task and the card-sort task in this manner for the duration of Session I.

Do you have any questions?

I will supervise you as you work to make certain that you follow the instructions I just described. Please get ready to begin working on the puzzle.

You may begin.

FOLLOWING COMPLETION OF SESSION I - READ THE FOLLOWING

We can soon begin Session II. Session II will last a total of 10 minutes. There are nine different Session II conditions that you can choose from. Each condition differs in length of time that you will spend working on a word-search puzzle.

As you can see on this checklist, you may choose to spend anywhere from one minute working on a word-search puzzle to nine minutes working on the puzzle. The time spent not working on a word-search will be spent performing "alternate" mental distraction tasks; the total time will be 10 minutes regardless of which you choose. Please check the box indicating your preferred Session II condition.

(Subject selects a Session on Participation Checklist)

It will take us a few minutes to set-up for Session II. While you're waiting I've been requested to have you complete an Opinion Survey about the Work Experiment you are participating in now. This Survey is very brief and you can complete it while we're making necessary preparations for Session II.

Please fully complete this Survey. I will tell you when we're ready to begin Session II.

(Debrief the Subject)

DEBRIEFING INSTRUCTIONS

The experiment is now over. There is no Session II condition. I'll explain why I informed you otherwise earlier.

The purpose of this experiment is to investigate the effects of different types of work policies on individuals' attitude toward the work. Whether people feel differently about these work policies, and whether these different policies enhance productivity is also of interest. Your choice of a Session II option was the way I was able to measure your interest in or motivation for performing this task.

The questionnaire you completed at the beginning of the experiment measured the relative strength of your values towards working for its own sake vs. working as a means to an end. We expect that people will respond differently in the experiment depending upon their different work values.

Please do not discuss any part of this experiment or repeat what I have just told you to other students. These students will likely be subjects in the near future and so must remain "naive" about what's going on.

Do you have any questions?

You can obtain information about the results of this study by contacting [Experimenter's name] through the Psychology Department during the academic year. You can just leave a stamped self-addressed envelope with your name and address in my mailbox and I'll mail you a summary of the results.

Thank you very much for your help. I hope you found it interesting.

Appendix C

Word Puzzle Task

In accordance with the instructions just explained to you by the Experimenter, find the words below in this puzzle. Words may be spelled forward, backward, diagonally or vertically in the puzzle. The Experimenter will remind you when you need to switch to the other task.

H B L E A G G T E E L P G R A D E S

C I F F A R T O B K C L N R P E K T

U Z A I N A Q K N L I B R A R Y R I

R E P A P D U E T Y A W B U S B W D

A Y N V I U A N E M J O Y C E E X E

B C E W A A P O S V Y D R Y H P E R

L E E B Z T E X T E O A A S S A L C

G Y R A N E T I G H P Z N D N S L Y

H E G N T O P X E E N Y W Y O S M L

T R E U A L E U R N N O I T I U T P

R A D N X R A Z O I R E C N C O L R

E E N Z I B D O T C U K O I M S R O

R C T C O N E T S K Q R U J T K L T

U O U L A N S E K Y A Z R H A Y Q A

T P O N V S E T O N P X S P D L S V

C Z A R Y U L N O I S E E Y O I V E

E O K O L Q U R B K D S Y F I N A L

L E X I N G T O N T R D E P P E N E

"CAMPUS LIFE"

BARUCH	COURSE	ELEVATOR	LEXINGTON	PAPER	TAXI
BERNARD	CREDITS	FINAL	LIBRARY	PASS	TEST
BOOKSTORE	CROWDS	GRADES	LOAN	SKYLINE	TEXT
CITY	CUNY	GRADUATE	NOISE	SKYSCRAPER	TOKEN
CLASS	DEGREE	LECTURE	NOTES	SUBWAY	TRAFFIC
					TUITION

Appendix D

The Participation Checklist

SESSION II

PARTICIPATION CHECKLIST

Please indicate below which session condition, as explained by the experimenter, you'd like to participate in. That is, how much time would you like to spend working on a word-search puzzle? (Check one)

[] 1. One minute

[] 2. Two minutes

[] 3. Three minutes

[] 4. Four minutes

[] 5. Five minutes

[] 6. Six minutes

[] 7. Seven minutes

[] 8. Eight minutes

[] 9. Nine minutes

Appendix E

Work Experiment Opinion Survey

WORK EXPERIMENT OPINION SURVEY

Thank you for your participation in the experiment. This survey has been constructed in order to allow you the opportunity to express your feelings about the psychological "work" experiment you just participated in.

There are only 15 items in this survey. Please use the answer sheet provided to indicate the extent to which you agree or disagree with each item listed. Follow the example below:

Example:

The instructions for completing this survey are clear.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	

In the example, the respondent felt that the instructions were clear and so completely blackened the "5" on the answer sheet to indicate this. Please be sure to answer each of the 15 items.

Your survey responses are completely confidential so please do NOT sign your name. Your individual responses will be analyzed on a group basis only sc please be frank and honest.

The following page asks for some descriptive information about yourself. Please complete it before answering the survey. Again, thank you for your cooperation, it is very much appreciated.

RESPONDENT INFORMATION

Age:_____ Year in School:_____

Employment Status:

_____ Employed Full-Time

_____ Employed Part-Time

_____ Not Presently in Paid Employment

* 1. The word-search puzzles I worked on were enjoyable.

2. Being stopped as I worked during the experiment was distracting.

** 3. I did not care for the experimenter's method for obtaining my work efforts.

4. The experimental room was adequately lit.

* 5. I wish my experimental task was something other than the word-search puzzles.

** 6. There was something I did not like about the work policy described to me at the outset of the experiment.

7. The instructions I received were clear and concise.

* 8. The word-search puzzles were too much fun to be considered "work."

* 9. I would not want to be required to work on more word-search puzzles in the near future.

10. I believe I learned something about experiments as a result of my participation.

**11. I doubt that I would choose to use the work policy I just experienced if I were the boss.

**12. I did not feel pressured to be productive during the experiment.

13. I had plenty of room to work on the puzzles.

*14. As a gift, I would like to receive word-search puzzles similar to the ones I just worked on.

**15. At times during the experiment I felt somewhat uneasy about being influenced by the work situation I was placed in.

* Task Satisfaction Item

** Performance Coercion Item

ANSWER SHEET

Item	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1.	1	2	3	4	5
2.	1	2	3	4	5
3.	1	2	3	4	5
4.	1	2	3	4	5
5.	1	2	3	4	5
6.	1	2	3	4	5
7.	1	2	3	4	5
8.	1	2	3	4	5
9.	1	2	3	4	5
10.	1	2	3	4	5
11.	1	2	3	4	5
12.	1	2	3	4	5
13.	1	2	3	4	5
14.	1	2	3	4	5
15.	1	2	3	4	5

References

Abernathy, W. (1978). Case studies in organizational behavior modification. (Doctorial Dissertation, Ohio State University). Dissertation Abstracts International, 39, 1023-B.

Adam, E.E., Jr. & Scott, W.E., Jr. (1971). The application of behavioral conditioning procedures to the problems of quality control. Academy of Management Journal, 14, 175-193.

Adams, J.S. (1965). Inequality in social exchange. In L. Berkowitz (Ed.), Advances in Experimental Psychology, (Vol. 2). New York: Academic Press.

Aldag, R.J., & Brief, A.P. (1979). Task Design and Employee Motivation. Illinois: Scott, Foresman, and Co.

Alderfer, C.P. (1972). Existence, Relatedness, and Growth: Human Needs in Organizational Settings. New York: Free Press.

Aldis, O. (1961). Of Pigeons and Men. Harvard Business Review, 39, 59-63.

Anderson, D.C., Crowell, C.R., Sponsel, S.S., Clarke, M., & Brence, J. (1982). Behavior management in the public accomodations industry: a 3 project demonstration. Journal of Organizational Behavior Management, 4, 33-65.

Anderson, D.C., Crowell, C.R., Sucec, J., Gilligan, K.G., & Wikoff, M. (1982). Behavior management of client contacts in a real estate brokerage: getting agents to sell more. Journal of Organizational Behavior Management, 4, 69-95.

Anderson, R., Manoogian, S.T., & Reznick, J.S. (1976). The undermining and enhancing of intrinsic motivation in preschool children. Journal of Personality and Social Psychology, 34, 915-922.

Argyris, C. (1971). Beyond freedom and dignity by B.F. Skinner: a review essay. Harvard Educational Review, 41, 550-567.

Arvey, R.D., & Ivancevich, J.M. (1980). Punishment in Organizations: A Review, Propositions and Research Suggestions. Academy of Management Review, 5, 123-132.

At Emery Air Freight: positive reinforcement boosts performance. (1973). Organizational Dynamics, (Winter), 41-50.

Atkinson, J.W. (1957). Motivational determinants of risk taking behavior. Psychological Review, 64, 359-372.

Atkinson, R.L., Atkinson, R.C., & Hilgard, E.R. (1983). Introduction to Psychology. New York: Harcourt, Brace Jovanonich, Inc.

Babb, H.W. & Kopp, D.G. (1978). Applications of behavior modification in organizations: a review and critique. Academy of Management Review, (April), 281-292.

Bandura, A. (1969). Principles of Behavior Modification. New York: Holt, Renchart, & Winston.

Beer, M. (1966). Leadership, Employee Needs, and Motivation. Ohio State University, College of Commerce and Administration; Bureau of Business Research, Monograph 129.

Berger, C.J., Cummings, L.C., & Heneman, H.G. (1975). Expectancy theory and operant conditioning predictions of performance under VR and CRF. Organizational Behavior and Human Performance, 14, 277-343.

Brief, A.P., Schuler, R.S., & Van Sell, M. (1981). Managing Job Stress. Massachusetts: Little, Brown, and Co.

Bureau of National Affairs. (1974). Employee absenteeism and turnover. Personnel Policies Forum, Washington, D.C.

Burgess, A. (1963). A Clockwork Orange. New York: W.W. Norton.

Butler, C.M., & Thomas, D.R. (1958). Secondary reinforcement as a function of the amount of primary reinforcement. Journal of Comparative and Physiological Psychology, 51, 346-348.

Calder, B.J., & Staw, B.M. (1975). Self perception on intrinsic and extrinsic motivation. Journal of Personality and Social Psychology, 31, 118-126.

Campbell, D.T., & Stanley, J.C. (1963). Experimental and Quasi-Experimental Designs for Research. New Jersey: Houghton Mifflin Co.

Campbell, J.P., & Pritchard, R.D. (1976). Motivation Theory in Industrial and Organizational Psychology. Illinois: Rand McNally College Publishing Company.

Carroll, S.J., & Tosi, H.L. (1977). Organizational Behavior. Illinois: St.Clair Press.

Cherrington, D.L., Reitz, J.H., & Scott, W.E. (1971). Effects of reward and contingent reinforcement on satisfaction and task performance. Journal of Applied Psychology, 55, 531-536.

Cook, T.D., & Campbell, D.T. (1979). Quasi-Experimentation: Design and Analysis Issues for Field Settings. Illinois: Rand McNally.

Condry, J. (1977). Enemies of exploration: self-initiated vs. other-initiated learning. Journal of Personality and Social Psychology, 35, 459-477.

Craighead, E.W., Kazdin, A.E., & Mahoney, M.J. (1976). Behavior Modification. New Jersey: Houghton Mifflin Co.

D'Amato, M.R. (1955). Secondary reinforcement and magnitude of primary reinforcement. Journal of Comparative and Physiological Psychology, 48, 378-380.

Davies, D.L. (1962). Normal drinking in recovered alcohol addicts. Quarterly Journal of Studies on Alcohol, 23, 94-104.

Davison, G.C. (1969). Appraisal of behavior modification techniques with adults in institutional settings. In C.M. Franks (Ed.), Behavior Therapy: Appraisal and Status. New York: McGraw Hill.

DeCharms, R. (1968). Personal Causation: The Internal Affective Determinants of Behavior. New York: Academic Press.

Deci, E.L. (1971). The effects of externally mediated rewards on intrinsic motivation. Journal of Personality and Social Psychology, 18, 105-115.

Deci, E.L. (1972a). The effects of contingent and non-contingent rewards and controls on intrinsic motivatoin. Organizational Behavior and Human Performance, 8, 217-229.

Deci, E.L. (1972b). Intrinsic motivation, extrinsic motivation, and inequity. Journal of Personality and Social Psychology, 22, 45-67.

Deci, E.L. (1973). Paying people doesn't always work the way you expect it to. Human Resource Management, 12, 28-32.

Deci, E.L. (1975a). Intrinsic Motivation. New York: Plenum Press.

Deci, E.L., Cascio, S.F., & Krusell, J. (1975b). Cognitive evaluation theory and some comments on the Calder-Staw critique. Journal of Personality and Social Psychology, 31, 81-85.

Drabman, R., & Spitalnik, R. (1973). Training a retarded child as a behavioral teaching assistant. Journal of Behavior Therapy and Experimental Psychiatry, 4, 269-272.

Drucker, P.F. (1954). The Practice of Management. New York: Harper & Row.

Dyer, L., & Parker, D.F. (1977). Classifying outcomes in work motivation research; An examination of the intrinsic-extrinsic dichotomy. Journal of Applied Psychology, 62, 624-627.

Elliott, J.D. (1953). Increasing office productivity through job enlargement. In The Human Side of Office Managers Job. Office Management Series, 34, 3-15.

Elliott, L., & Geller, E.S. (1980). Contingency management in business settings: a critical review. Catalog of Selected Documents in Psychology, 10, 1-26.

Farr, J.L. (1976). Task characteristics, reward contingency, and intrinsic motivation. Organizational Behavior and Human Performance, 16, 294-307.

Foa, E.B., & Emmelkamp, P.M.G. (1983). Failures in Behavior Therapy. New York: John Wiley & Sons.

Gamboa, V. (1974). Beyond Skinner with dignity. Dissertaton Abstract International.

Geller, E.S., Wylie, R.G., & Farris, J.C. (1971). An attempt at applying prompting and reinforcement toward pollution control. Proceedings, 79th Annual Convention, American Psychological Association.

Goldstein, A.P., & Sorcer, M. (1974). Changing Supervisor Behavior. New York: Pergamon Press.

Goodrich, K.P. (1960). Running speed and drinking rate on function of sucrose concentrations and amount of consummatory activity. Journal of Comparative and Physiological Psychology, 53, 245-250.

Graen, G.S. (1969). Instrumentality theory of work motivation: Some experimental results and suggested modifications. Journal of Applied Psychological Monographs, 53, 1-25.

Gray, J.L. (1979). The myths of the myths about behavior modification in organizations: a reply to Locke's criticism of behavior modification. Academy of Management Review, 4(1), 121-129.

Greene, D., & Lepper, N.R. (1974). Effects of extrinsic rewards on childrens subsequent intrinsic interest. Child Development, 45, 45-52.

Greene, D., Sternberg, B., & Lepper, M. (1976). Overjustification in a token economy. Journal of Personality and Social Psychology, 34, 455-464.

Gupton, T., & LeBow, M.D. (1971). Behavior management in a large industrial firm. Behavior Therapy, 2, 78-82.

Guthrie, E.R. (1959). Association by contiguity. In S. Koch (Ed.). Psychology: A Study of a Science, Vol. 2. New York: McGraw Hill.

Hackman, J.R., & Lawler, E.E. (1971). Employee reactions to job characteristics. Journal of Applied Psychology Monographs, 55, 259-286.

Hackman, J.R., & Oldham, G.R. (1976). Motivation through the design of work: Test of a theory. Organizational Behavior and Human Performance, 10, 250-279.

Hamner, W.C., & Foster, L.W. (1975). Are intrinsic and extrinsic rewards additive: A test of Deci's cognitive evaluation theory of task motivation. Organizational Behavior and Human Performance, 14, 398-415.

Hall, E. (1972). Will success spoil B.F. Skinner? Psychology Today, 6, (Nov.), 65-72.

Harris, M.B., & Rothberg, C. (1972). A self-control approach to reduced smoking. Psychological Reports, 31, 165-166.

Heiman, G. (1975). A note on operant conditioning principles extrapolated to the theory of management. Organizational Behavior and Human Performance, 13, 165-170.

Herman, J.A., deMontes, A.I., Dominguez, G., Montes, F., & Hopkins, B.L. (1973). Effects on bonuses for punctuality on the tardiness of industrial workers. Journal of Applied Behavior Analysis, 6, 563-570.

Herzberg, F. (1964). The motivation-hygiene concept and problems of manpower. Personnel Administration, 27(1), 3-7.

Hosie, T.W. (1974). Pupil performance and the Premack principle. American Educational Research Journal, 11, 241-247.

Hulin, C.L., & Blood, H.R. (1968). Job enlargement, individual differences, and worker responses. Psychological Bulletin, 69(1), 41-55.

Jablonsky, S.E., & DeVries, D.I. (1972). Operant conditioning principles extrapolated to the theory of management. Organizational Behavior and Human Performance, 7, 340-358.

Jurgensen, C.E. (1978). Job preferences (what makes a job good or bad?). Journal of Applied Psychology, 63, 267-276.

Kane, G., & Gantzer, S. (1977). Preferred lessons as reinforcers in a special class: an investigation of the Premack principle. Padagogische Psychologies, 9(2), 78-89.

Katz, D., & Kahn, R.L. (1978). Social Psychology of Organizations. New York: Wiley.

Kazdin, A.E. (1978). Methodological and interpretive problems of single-case experimental designs. Journal of Consulting and Clinical Psychology, 46, 629-642.

Kempen, R.W., & Hall, R.V. (1977). Reduction of industrial absenteeism: results of a behavioral approach. Journal of Organizational Behavior Management, 1, 1-22.

King, A.S. (1976). Management's ectasy and disparity over job enrichment. Training and Development Journal, 30(3), 308.

Kipnis, D. (1987). Psychology and Behavioral Technology. American Psychologist, (January), 30-36.

Korman, A.K., Greenhaus, J.H., & Badin, I.S. (1977). Personnel attitudes and motivation. Annual Review of Psychology, 28, 175-196.

Komacki, J., Waddell, W.M., & Pearce, M.G. (1977). The applied behavior analysis approach and individual employees. Organizational Behavior and Human Performance, 19, 337-352.

Kraeling, D. (1961). Analysis of amount of reward as a variable in learning. Journal of Comparative and Physiological Psychology, 54, 560-565.

Kruglanski, A.W., Alan, S., & Lewis, T. (1972). Retrospective misattribution and task enjoyment. Journal of Experimental Social Psychology, 8, 493-501.

Kruglanski, A.W. (1975a). The endogenous-exogenous partition in attribution theory. Psychological Review, 82, 387-406.

Kruglanski, A.W., Riter, A., Amitai, A., Margollin, B.S., Shabtai, L., & Zakash, D. (1975b). Can money enhance intrinsic motivation: A test of the content-consequence hypothesis. Journal of Personality and Social Psychology, 31, 744-750.

Kruglanski, A.W., Riter, A., Arazi, D., Agassi, R., Montegio, J., Peri, I., & Peretz, M. (1975c). Effects of task-intrinsic rewards upon extrinsic and intrinsic motivation. Journal of Personality and Social Psychology, 31, 699-705.

Lamal, P.A., & Benfield, A. (1978). The effect of self-monitoring on job tardiness and percentage of time spent working. Journal of Organizational Behavior Management, 1, 142-149.

Latham, G.P., & Dossett, D.L. (1978). Designing incentive plans for unionized employees: a comparison of continuous and variable ration reinforcement schedules. Personnel Psychology, 31, 47-62.

Latham, G.P., & Saari, L.M. (1979). The application of social learning theory to training supervisors through behavior modelling. Journal of Applied Psychology, 64, 239-246.

Lawler, E.E. (1971). Pay and Organizational Effectiveness: A Psychological Review. New York: McGraw Hill.

Lawler, E.E., Hackman, R.I., & Kaufman, S. (1973). Effects on job design: a field experiment. Journal of Applied Social Psychology, 3(1), 49-62.

Lawler, E.E., & Suttle, J.L. (1973). Expectancy theory and job performance. Organizational Behavior and Human Performance, 9, 482-503.

Lepper, N.R., & Greene, D. (1975). Turning play into work; Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. Journal of Personality and Social Psychology, 31, 479-486.

Lepper, N.R., Greene, D., & Nisbett, R.E. (1973). Undermining children's intrinsic interest with extrinsic rewards. Journal of Personality and Social Psychology, 31, 118-126.

Leibert, R., & Spiegler, D. (1974). Personality: Strategies for the Study of Man. Illinois: Dorsey Press.

Levine, F.M., & Fasnacht, G. (1974). Token rewards may lead to token learning. American Psychologist, November, 916-820.

Locke, E.A., Shaw, K.N., Saari, L.M., & Latham, G.P. (1981). Goal setting and task performance: 1969-1981. Psychological Bulletin, 90, 125-152.

Locke, E.A. (1977). The myth of behavior modification in organizations. The Academy of Management Review, 2, 543-553.

Lovaas, O.I., & Bucher, B.D. (1974). Perspectives in Behavior Modification with Deviant Children. New Jersey: Prentice Hall.

Lundin, R.W. (1961). Personality. New York: MacMillan.

Luthans, F. (1973). The contingency theory of management. Business Horizons, 16, 67-72.

Luthans, F. (1974). Organizational Behavior. New York: McGraw Hill.

Luthans, F., & Kreitner, R. (1973). The role of punishment on Organizational Behavior Modification. Public Personnel Management, (May-June), 6-11.

Luthans, F., & Kreitner, R. (1975). Organizational Behavior Modification. New Jersey: Scott, Foresman, & Co.

Luthans, F., & Ottemann, R. (1973). Motivation versus Learning Approaches to Organizational Behavior. Business Horizons, 16, 55-62.

Luthans, F., & Reif, W. (1974). Job enrichment: long on theory, short on practice. Organizational Dynamics, 2, 30-38.

Luthans, F., & White, D. (1971). Behavior Modification application to manpower management. Personnel Administration, 34, 41-47.

Lyon, R. (1976). Use of the Premack principle to modify classroom attendance behavior in a severely retarded individual. Research & The Retarded, 3, 28-34.

Masters, W.H., & Johnson, V.E. (1975). Principles of the new sex therapy. American Journal of Psychiatry, 133, 548-554.

Mawhinney, T.C. (1975). Operant terms and concepts in the description of individual work behavior: some problems of interpretation, application, and evaluation. Journal of Applied Psychology, 60, 704-712.

McCall, R.J. (1972). Beyond reason and evidence; the metapsychology of Professor B.F. Skinner. Journal of Clinical Psychology, 28, 125-139.

McCarthy, M. (1978). Decreasing the incidence of "high bobbins" in a textile spinning department through a group feedback procedure. Journal of Organizational Behavior Management, 1, 150-154.

McCormick, E.J., & Ilgen, D. (1980). Industrial Psychology. New Jersey: Prentice-Hall, Inc.

McGhee, W., & Tullar, W.L. (1978). A note on evaluating behavior modification and behavior modelling as industrial training techniques. Personnel Psychology, 31, 477-484.

McGinnies, E., & Ferster, C. (1971). The Reinforcement of Social Behavior. New Jersey: Houghton Mifflin.

McGraw, J., & McCullers, J. (1975). The distracting effects of material reward. Journal of Experimental Child Psychology, 18, 149-158.

Meichenbaum, D. (1966). Effects of social reinforcements on the level of abstraction schizophrenics. Journal of Abnormal and Social Psychology, 71, 354-362.

Meichenbaum, D. (1976). Cognitive behavior modification. In Spence, Carson, Thibant, (Eds.), Behavioral Approaches to Therapy. New Jersey: General Learning Press.

Mikulas, W. (1972). Behavior Modification: An Overview. New York: Harper & Row.

Miller, L.M. (1977). Improving sales and forecast accuracy in nation-wide sales organizations. Journal of Organizational Behavior Management, 1, 110-117.

Mitchell, W., & Stoffelmayr, B. (1973). Application of the Premack principle to the behavioral control of extremely inactive schizophrenics. Journal of Applied Behavior Analysis, 6(3), 419-423.

Muchinsky, P.M. (1979). Human resource management of employee absenteeism, In Veysey & Hall, (Eds.), The New World of Managing Human Resources. California: North Hollywood Printing.

Muchinsky, P.M. (1983). Psychology Applied to Work. Illinois: The Dorsey Press.

Murphy, J.R. (1972). Is it Skinner or nothing? Training and Development Journal, 29, 2-8.

Murray, R. (1973). Behavioral Management Objectives. Personnel Journal, 52, 304-306.

Nealy, S.M. (1964). Determining worker preferences among employee benefit programs. Journal of Applied Psychology, 48, 7-12.

Nord, W. (1969). Beyond the teaching machine: the neglected area of operant conditioning in theory and practice of management. Organizational Behavior and Human Performance, 4, 375-401.

Nord, W. (1971). Improving attendance through rewards. Organizational Behavior and Human Performance, 33, 37-41.

Ofiesh, C.D. (1965). Programmed Instruction: A Guide for Management. New York: American Management Association.

Oldham, G.R. (1976). Job characteristics: The motivating effect of interpersonal and individual variables. Human Relations, 29, 559-569.

Oldham, G.R., Hackman, R.J., & Pearce, T.L. (1976). Conditions under which employees respond positively to enriched work. Journal of Applied Psychology, 61, 395-403.

Orpen, C. (1970). The effects of job enrichment on employee satisfaction, motivation, involvement, and performance. Human Relations, 32, 109-217.

Orpen, C. (1978). Effects of bonuses for attendance on the absenteeism of industrial workers. Journal of Organizational Behavior Management, 1, 118-124.

Orwell, G. (1949). Nineteen Eighty-Four. New York: Harcourt Brace Jovanovich.

Parmerlee, M., & Schwenk, C. (1979). Radical behaviorism in organizations: Misconceptions in the Locke-Grey debate. Academy of Management Review, 4, 601-607.

Pedalino, E., & Gamboa, V. (1974). Behavior modification and absenteeism: Intervention in one industrial setting. Journal of Applied Psychology, 59, 694-698.

Phillips, J.S., & Lord, R.G. (1980). Determinants of intrinsic motivation: locus of control and competence information as components of Deci's cognitive evaluation theory. Journal of Applied Psychology, 65, 211-218.

Phillips, J.S., & Freedman, S.M. (1985). Contingent pay and intrinsic task interest: moderating affects of work values. Journal of Applied Psychology, 70, 306-313.

Pierce, C.H., & Risley, T.R. (1974). Improving job performance of neighborhood youth corps aides in an urban recreation program. Journal of Applied Behavior Analysis, 7, 207-215.

Pinder, C.C. (1976). Additivity vs. nonadditivity of intrinsic and extrinsic incentives: implications for work motivation, performance, and attitudes. Journal of Applied Psychology, 61, 693-700.

Porter, L.W. (1973). Turning work into non-work: The rewarding environment. In M.D. Dunnette, (Ed.), Work and Non-Work in the Year 2001. California: Brooke/Cole Publishing Co., 113-133.

Porter, L.W., & Lawler, E.E. (1968). Managerial Attitudes and Performance. New York: Irwin.

Porter, L.W., & Stiers, R.M. (1973). Organizational work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 30, 151-176.

Powell, J., & Azrin, N. (1968). The effects of shock on cigarette smoking. Journal of Applied Behavior Analysis, 1, 63-71.

Premack, D. (1959). Toward Empirical Behavioral Laws. Psychological Review, 66, 219-233.

Premack, D. (1961). Reversability of the reinforcement relation. Science, 136, 255-257.

Premack, D. (1963a). Rate differential reinforcement in monkey manipulation. Journal of the Experimental Analysis of Behavior, 6, 81-89.

Premack, D. (1963b). Predictions of the comparative reinforcement values of running and drinking. Science, 139, 1062-1063.

Premack, D. (1965). Reinforcement Theory. Nebraska Symposium on Motivation. University of Nebraska Press.

Pritchard, R.D., Campbell, K.M., & Campbell, D.J. (1977). Effects of extrinsic financial rewards on intrinsic motivation. Journal of Applied Psychology, 62, 9-15.

Pritchard, R.D., Leonard, D.W., vonBergen, C.W., Jr., & Kirk, R.J. (1976). The effects of varying schedules of reinforcement on human task performance. Organizational Behavior and Human Performance, 16, 205-230.

Redd, W.H., Porterfield, A.L., & Andersen, B.L. (1970). Behavior Modification: Behavioral Approaches to Human Problems. New York: Random House.

Reiss, S., & Sushinsky, L.W. (1975). Overjustification, competing responses and intrinsic interest. Journal of Personality and Social Psychology, 31, 1116-1125.

Reynolds, G.S. (1968). A Primer of Operant Conditioning. Illinois: Scott, Foresman.

Robinson, J.P., & Shaver, P.R. (1973). Measures of Social Psychological Attitudes. Institute for Social Research, Ann Arbor, Michigan.

Ross, M. (1975). Salience of reward and intrinsic motivation. Journal of Personality and Social Psychology, 32, 245-254.

Rummler, C.A. (1967). Managing the Instructional Programming Effort. Michigan: University of Michigan.

Runnion, A., Johnson, T., & McWharter, J. (1978). The effects of feedback and reinforcement on truck turnaround time in materials transportation. Journal of Organizational Behavior Management, 1, 39-52.

Schaeffer, J., & Premack, D. (1961). Rate differentials in rats. Journal of Comparative and Physiological Psychology, 53, 347-361.

Schneider, J., & Locke, E.A. (1971). A critique of Herzberg's incident classification system and a suggested revision. Organizational Behavior and Human Performance, (July), 187-195.

Schultz, D. (1981). A History of Modern Psychology. New York: Academic Press.

Scott, W.E. (1966). Activation theory and task design. Organizational Behavior and Human Performance, 1, 3-30.

Sellitz, C.A., Wrightsman, D., & Cook, P. (1981). Research Methods. New York: Holt, Reinhart, & Winston.

Shaw, M.E., & Wright, J.M. (1967). Scales for the Measurement of Attitudes. New York: McGraw Hill.

Sidman, M. (1960). Tactics of Scientific Research. New York: Basic Books.

Sims, H.P. (1980). Further thoughts on punishment in organizations. Academy of Management Review, 5, 133-138.

Skinner, B.F. (1962). Science & Human Behavior. New York: MacMillan.

Skinner, B.F. (1963). The flight from the laboratory. In Marz, M. (Ed.), Theories in Contemporary Psychology. New York: MacMillan.

Skinner, B.F. (1969). Contingencies of Reinforcement. New York: Appleton Century Crofts.

Skinner, B.F. (1971). Beyond Freedom & Dignity. New York: Appleton Century Crofts.

Smith, P.C., & Kendall, L.M. (1963). Retranslation of expections: An approach to the construction of unambiguous anchors for rating scales. Journal of Applied Psychology, 47, 155-199.

Stampfl, T.G., & Lewis, D.J. (1967). Essentials of implosive therapy: A learning based psychodynamic behavioral therapy. Journal of Abnormal Psychology, 72, 496-583.

Statland, E., & Cannon, L. (1972). Social Psychology. Pennsylvania: Saunders.

Staw, B.M. (1984). Organizational behavior: a review of the field's outcome variables. Annual Review of Psychology, 35, 627-666.

Staw, B.M., Calder, B.J., Hess, R.K., & Sandelands, L.E. (1980). Intrinsic motivation and norms about payment. Journal of Personality, 48, 1-14.

Stellar, E., & Hill, J.H. (1952). The rat's rate of drinking as a function of water deprivation. Journal of Comparative Physiological Psychology, 45, 96-102.

Stern, P.C. (1979). Evaluating Social Science Research. New York: Oxford University Press.

Stumphauzer, J.S. (1973). Behavior Therapy with Delinquents. Illinois: Thomas.

Switzky, H.N., & Haywood, H.C. (1974). Motivational orientation and the relative efficacy of self-monitoring and externally imposed reinforcement systems in children. Journal of Personality and Social Psychology, 30, 360-366.

Tarpy, R.M. (1975). Basic Principles of Learning. New Jersey: Scott, Foresman, and Company.

Tharp, E.G., & Wetzel, R.J. (1969). Behavior Modification in the Natural Environment. New York: Academic Press.

Turner, A.N., & Lawrence, P.R. (1965). Industrial Jobs and the Worker. Massachusetts: Harvard Graduate School of Business Administration.

Ullman, L.P., & Krasner, L. (1965). Case Studies in Behavior Modification. New York: Holt, Reinhart, and Winston.

Van Hevel, J., & Hawkins, R.P. (1974). Modification of behavior in secondary school students rising the Premack Principle and response cost technique. School Applications of Learning Theory, 6, 31-41.

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

Waird, H. (1972). Why Manage Behavior? A Case for Reinforcement. Human Resource Management, 11, 15-20.

Webb, E.J., Campbell, D.T., Schwartz, R.D., & Sechrest, L. (1966). Unobtrusive Measures: Non-reactive in the Social Sciences. Illinois: Rand McNally.

Weiner, B. (1980). Human Motivation. New York: Holt, Reinhart & Winston.

Weisberg, P., & Waldrop, P.B. (1972). Fixed interval work habits of Congress. Journal of Applied Behavior Analysis, 5, 93-97.

Wexley, K., & Nemeroff, W. (1975). Effectiveness of reinforcement and goal setting as methods of management development. Journal of Applied Psychology, 60, 446-450.

Where Skinner's Theories Work. (1972). Business Week, December 2, 64-65.

White, R.W. (1959). Motivation reconsidered: The concept of competence motivation. Psychological Review, 66, 297-333.

Whyte, W.F. (1972). Skinnerian theory in organizations. Psychology Today, 5, 66-68.

Wikoff, M., Anderson, D.C., & Cromwell, C.R. (1982). Behavior management in a factory setting: increasing work efficiency. Journal of Organizational Behavior Management, 4, 97-127.

Willis, J. (1976). Great Experiments in Behavior Modification. Illinois: Hackett Publishing Co., Inc.

Wolf, M.M., & Risley, T.R. (1971). Reinforcement: Applied Research. In R. Glaser, (Ed.), The Nature of Reinforcement. New York: Academic Press.

Wollack, S., Goodale, J.G., Wijting, J.P., & Smith, P.C. (1971). Development of the Survey of Work Values. Journal of Applied Psychology, 55, 331-338.

Wolpe, J. (1969). The Practice of Behavior Therapy. New York: Pergamon Press.

Work in America (1973). Report of a Special Task Force to the Secretary of Health, Education and Welfare. The MIT Press.

Yukl, G.A., & Latham, G.P. (1975). Consequences of reinforcement schedules and incentive magnitude for employee performance: problems encountered in an industrial setting. Journal of Applied Psychology, 60, 294-298.

Yukl, G.A., & Wexley, K.N. (1984). Organizational Behavior and Personnel Psychology. Illinois: Richard D. Irwin.

Yukl, G.A., Wexley, K.N., & Seymore, J.D. (1972). Effectiveness of pay incentives under variable ratio and CRF. Journal of Applied Psychology, 56, 19-23.