underlies behavior modification. The notion of positive reinforcement, schedules of reinforcement, and the role of management are discussed. Following this, Hamner and Hamner review some recent field applications of behavior modification. Finally, Locke suggests some possible shortcomings of the behavior modification approach, including critiques of both the theory and applications.

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Reinforcement Theory and Contingency Management in Organizational Settings

W. Clay Hamner

Traditionally management has been defined as the process of getting things done through other people. The succinctness of this definition is misleading in that, while it may be easy to say *what* a manager does, it is difficult to describe the determinants of behavior, i.e. to tell *how* the behavior of the manager influences the behavior of the employee toward accomplishment of a task. Human behavior in organizational settings has always been a phenomenon of interest and concern. However, it has only been in recent years that a concerted effort has been made by social scientists to describe the principles of reinforcement and their implications for describing the determinants of behavior as they relate to the theory and practice of management (e.g. see Nord, 1969; Wiard, 1972; Whyte, 1972; Jablonsky and DeVries, 1972; Hersey and Blanchard, 1972; and Behling, Schriesheim, and Tolliver, in press).[1]

Organizational leaders must resort to environmental changes as a means of influencing behavior. Reinforcement principles are the most useful method for this purpose because they indicate to the leader how he might proceed in designing or modifying the work environment in order to effect specific changes in behavior (Scott and Cummings, 1973). A reinforcement approach to management does not consist of a bag of tricks to be applied indiscriminately for the purpose of coercing unwilling people (Michael & Meyerson, 1962). Unfortunately, many people who think of Skinnerian applications (Skinner, 1969) in the field of management and personnel think of manipulation and adverse control over employees. Increased knowledge available today of the positive aspects of conditioning as applied to worker performance should help to dispel these notions.

The purpose of this paper is to describe the determinants of behavior as seen from a reinforcement theory point of view, and to describe how the management of the contingencies of reinforcement in organizational settings is a key to successful management. Hopefully, this paper will enable the manager to understand how his behavior affects the behavior of his subordinates and to see that in most cases the failure or success of the worker at the performance of a task is a direct function of the manager's own behavior. Since a large portion of the manager's time is spent in the process of modifying behavior patterns and shaping them so that they will be more goal oriented, it is appropriate that this paper begin by describing the processes and principles that govern behavior.

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LEARNING AS A PREREQUISITE FOR BEHAVIOR

Learning is such a common phenomenon that we tend to fail to recognize its occurrence. Nevertheless, one of the major premises of reinforcement theory is that all behavior is learned—a worker's skill, a supervisor's attitude and a secretary's manners. The importance of learning in organizational settings is asserted by Costello and Zalkind when they conclude:

> Every aspect of human behavior is responsive to learning experiences. Knowledge, language, and skills, of course; but also attitudes, value systems, and personality characteristics. All the individual's activities in the organization—his loyalties, awareness of organizational goals, job performance, even his safety record have been learned in the largest sense of that term (1963, p. 205).

There seems to be general agreement among social scientists that learning can be defined as *a relatively permanent change in behavior potentiality that results from reinforced practice or experience*. Note that this definition states that there is change in behavior potentiality and not necessarily in behavior itself. The reason for this distinction rests on the fact that we can observe other people responding to their environments, see the consequences which accrue to them, and be vicariously conditioned. For example, a boy can watch his older sister burn her hand on a hot stove and "learn" that pain is the result of touching a hot stove. This definition therefore allows us to account for "no-trial" learning. Bandura (1969) describes this as imitative learning and says that while behavior can be *acquired* by observing, reading, or other vicarious methods, "*performance* of observationally learned responses will depend to a great extent upon the nature of the reinforcing consequences to the model or to the observer" (p. 128).

Luthans (1973, p. 362) says that we need to consider the following points when we define the learning process:

1 Learning involves a change, though not necessarily an improvement, in behavior. Learning generally has the connotation of improved performance, but under this definition bad habits, prejudices, stereotypes, and work restrictions are learned.

2 The change in behavior must be relatively permanent in order to be considered learning. This qualification rules out behavioral changes resulting from fatigue or temporary adaptations as learning.

3 Some form of practice or experience is necessary for learning to occur.

4 Finally, practice or experience must be reinforced in order for learning to occur. If reinforcement does not accompany the practice or experience, the behavior will eventually disappear.

From this discussion, we can conclude that learning is the acquisition of knowledge, and performance is the translation of knowledge into practice. The primary effect of reinforcement is to strengthen and intensify certain aspects

of ensuing behavior. Behavior that has become highly differentiated (shaped) can be understood and accounted for only in terms of the history of reinforcement of that behavior (Morse, 1966). Reinforcement generates a reproducible behavior process in time. A response occurs and is followed by a reinforcer, and further responses occur with a characteristic temporal patterning. When a response is reinforced it subsequently occurs more frequently than before it was reinforced. Reinforcement may be assumed to have a characteristic and reproducible effect on a particular behavior, and usually it will enhance and intensify that behavior (Skinner, 1938; 1953).

TWO BASIC LEARNING PROCESSES

Before discussing in any detail exactly how the general laws or principles of reinforcement can be used to predict and influence behavior, we must differentiate between two types of behavior. One kind is known as *voluntary* or *operant* behavior, and the other is known as *reflex* or *respondent* behavior. Respondent behavior takes in all responses of human beings that are *elicited* by special stimulus changes in the environment. An example would be when a person turns a light on in a dark room (stimulus change), his eyes contract (respondent behavior).

Operant behavior includes an even greater amount of human activity. It takes in all the responses of a person that may at some time be said to have an effect upon or do something to the person's outside world (Keller, 1969). Operant behavior *operates* on this world either directly or indirectly. For example, when a person presses the up button at the elevator entrance to "call" the elevator, he is operating on his environment.

The process of learning or acquiring reflex behavior is different from the processes of learning or acquiring voluntary behavior. The two basic and distinct learning processes are known as *classical conditioning* and *operant conditioning*. It is from studying these two learning processes that much of our knowledge of individual behavior has emerged.

Classical Conditioning[2]

Pavlov (1902) noticed, while studying the automatic reflexes associated with digestion, that his laboratory dog salivated (unconditioned response) not only when food (unconditioned stimulus) was placed in the dog's mouth, but also when other stimuli were presented before food was placed in the dog's mouth. In other words, by presenting a neutral stimulus (ringing of a bell) every time food was presented to the dog, Pavlov was able to get the dog to salivate to the bell alone.

A stimulus which is not a part of a reflex relationship (the bell in Pavlov's experiment) becomes a *conditioned stimulus* for the response by repeated, temporal pairing with an *unconditioned* stimulus (food) which already elicits the response. This new relationship is known as a conditioned reflex, and the pairing procedure is known as classical conditioning.

While it is important to understand that reflex behavior is conditioned by a different process than is voluntary behavior, classical conditioning principles are of little use to the practicing manager. Most of the behavior that is of interest to society does not fit in the paradigm of reflex behavior (Michael and Meyerson, 1962). Nevertheless, the ability to generalize from one stimulus setting to another is very important in human learning and problem solving, and for this reason, knowledge of the classical conditioning process is important.

Operant Conditioning[3]

The basic distinction between classical and operant conditioning procedures is in terms of the *consequences* of the conditioned response. In classical conditioning, the sequence of events is independent of the subject's behavior. In operant conditioning, consequences (rewards and punishments) are made to occur as a consequence of the subject's response or failure to respond. The distinction between these two methods is shown in Figure 1.

In Figure 1, we see that classical conditioning involves a three stage process. In the diagram, let *S* refer to *stimulus* and *R* to *response*. We see that in stage 1, the unconditioned stimulus (food) elicits an unconditioned response (salivation). In stage 2, a neutral stimulus (bell) elicits no known response. However, in stage 3, after the ringing of the bell is repeatedly paired with the presence of food, the bell alone becomes a conditioned stimulus and elicits a conditioned response (salivation). The subject has no control over the unconditioned or conditioned response, but is "at the mercy" of his environment and his past conditioning history.

Note however, that for voluntary behavior, the consequence is dependent on the behavior of the individual in a given stimulus setting. Such behavior can be said to "operate" (Skinner, 1969) on the environment, in contrast to behavior which is "respondent" to prior eliciting stimuli (Michael and Meyerson, 1962). Reinforcement is not given every time the stimulus is presented, but is *only* given when the correct response is made. For example, if an employee taking

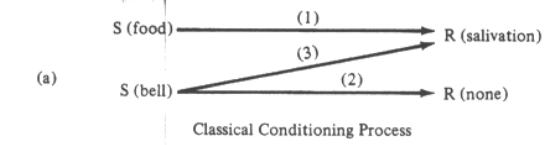

Figure 1 Classical vs. operant conditioning.

a work break puts a penny (R) in the soft drink machine (S), nothing happens (consequence). However, if he puts a quarter (R) in the machine (S), he gets the soft drink (consequence). In other words, the employee's behavior is *instrumental* in determining the consequences which accrue to him.

The interrelationships between the three components of (1) *stimulus* or environment, (2) *response* or performance, and (3) consequences or *reinforcements* are known as the *contingencies* of reinforcement. Skinner (1969) says "The class of responses upon which a reinforcer is *contingent* is called an operant, to suggest the action on the environment followed by reinforcements (p. 7)." Operant conditioning presupposes that human beings explore their environment and act upon it. This behavior, randomly emitted at first, can be constructed as an operant by making a reinforcement contingent on a response. Any stimulus present when an operant is reinforced acquires control in the sense that the rate of response for that individual will be higher when it is present. "Such a stimulus does not act as a *goal*; it does not elicit the response (as was the case in classical conditioning of reflex behavior)[4] in the sense of forcing it to occur. It is simply an essential aspect of the occasion upon which response is made and reinforced (Skinner, 1969, p. 7)."

Therefore, an adequate formulation of the interaction between an individual and his environment must always specify three things: (1) the occasion upon which a response occurs, (2) the response itself and (3) the reinforcing consequences. Skinner holds that the consequences determine the likelihood that a given operant will be performed in the future. Thus to change behavior, the consequences of the behavior must be changed, i.e. the contingencies must be rearranged (the ways in which the consequences are related to the behavior) (Behling, *et al.*, in press). For Skinner, this behavior generated by a given set of contingencies can be accounted for without appealing to hypothetical inner states (e.g. awareness or expectancies). "If a conspicuous stimulus does not have an effect, it is not because the organism has not attended to it or because some central gatekeeper has screened it out, but because the stimulus plays no important role in the prevailing contingencies (Skinner 1969, p. 8)."

Arrangement of the Contingencies of Reinforcement

In order to *understand* and *interpret* behavior, we must look at the interrelationship among the components of the contingencies of behavior. If one expects to influence behavior, he must also be able to manipulate the consequences of the behavior (Skinner, 1969). Haire (1964) reports the importance of being able to manipulate the consequences when he says,

> Indeed, whether he is conscious of it or not, the superior is bound to be constantly shaping the behavior of his subordinates by the way in which he utilizes the rewards that are at his disposal, and he will inevitably modify the behavior patterns of his work group thereby. For this reason, it is important to see as clearly as possible what is going on, so that the changes can be planned and chosen in advance, rather than simply accepted after the fact.

After appropriate reinforcers that have sufficient incentive value to maintain stable responsiveness have been chosen, the contingencies between specific performances and reinforcing stimuli must be arranged (Bandura, 1969). Employers intuitively use rewards in their attempt to modify and influence behavior, but their efforts often produce limited results because the methods are used improperly, inconsistently, or inefficiently. In many instances considerable rewards are bestowed upon the workers, but they are not made conditional or contingent on the behavior the manager wishes to promote. Also, "long delays often intervene between the occurrence of the desired behavior and its intended consequences; special privileges, activities, and rewards are generally furnished according to fixed time schedules rather than performance requirements; and in many cases, positive reinforcers are inadvertently made contingent upon the wrong type of behavior (Bandura, 1969, pp. 229–230)."

One of the primary reasons that managers fail to "motivate" workers to perform in the desired manner is due to a lack of understanding of the power of the contingencies of reinforcement over the employee and of the manager's role in arranging these contingencies. The laws or principles for arranging the contingencies are not hard to understand, and if students of behavior grasp them firmly, they are powerful managerial tools which can be used to increase supervisory effectiveness.

As we have said, operant conditioning is the process by which behavior is modified by manipulation of the contingencies of the behavior. To understand how this works, we will first look at various *types* (arrangements) of contingencies, and then at various *schedules* of the contingencies available. Rachlin (1970) described the four basic ways available to the manager of arranging the contingencies—*positive reinforcement, avoidance learning, extinction*, and *punishment*. The difference among these types of contingencies depends on the consequence which results from the behavioral act. Positive reinforcement and avoidance learning are methods of strengthening *desired* behavior, and extinction and punishment are methods of weakening *undesired* behavior.

Positive Reinforcement "A positive reinforcer is a stimulus which, when added to a situation, strengthens the probability of an operant response (Skinner, 1953, p. 73)." The reason it strengthens the response is explained by Thorndike's (1911) Law of Effect. This law states simply that behavior which appears to lead to a positive consequence tends to be repeated, while behavior which appears to lead to a negative consequence tends not to be repeated. A positive consequence is called a reward.

Reinforcers, either positive or negative, are classified as either: (1) unconditioned or primary reinforcers, or (2) conditioned or secondary reinforcers. Primary reinforcers such as food, water, and sex are of biological importance in that they are innately rewarding and have effects which are independent of past experiences. Secondary reinforcers such as job advancement, praise, recognition, and money derive their effects from a consistent pairing with other reinforcers (i.e., they are conditioned). Secondary reinforcement, therefore,

depends on the individual and his past reinforcement history. What is rewarding to one person may not be rewarding to another. Managers should look for a reward system which has maximal reinforcing consequences to the group he is supervising.

Regardless of whether the positive reinforcer is primary or secondary in nature, once it has been determined that the consequence has reward value to the worker, it can be used to increase the worker's performance. So the *first step* in the successful application of reinforcement procedures is to select reinforcers that are sufficiently powerful and durable to "maintain responsiveness while complex patterns of behavior are being established and strengthened" (Bandura, 1969, p. 225).

The *second step* is to design the contingencies in such a way that the reinforcing events are made contingent upon the desired behavior. This is the rule of reinforcement which is most often violated. Rewards must result from performance, and the greater the degree of performance by an employee, the greater should be his reward. Money as a reinforcer will be discussed later, but it should be noted that money is not the only reward available. In fact, for unionized employees, the supervisor has virtually no way to tie money to performance. Nevertheless, other forms of rewards, such as recognition, promotion and job assignments, can be made contingent on good performance. Unless a manager is willing to discriminate between employees based on their level of performance, the effectiveness of his power over the employee is nil.

The arrangement of positive reinforcement contingencies can be pictured as follows:

Stimulus $\rightarrow$ Desired response $\rightarrow$ Positive consequences
($S \rightarrow R \rightarrow R^{+}$)

The stimulus is the work environment which leads to a response (some level of performance). If this response leads to positive consequences, then the probability of that response being emitted again increases (Law of Effect). Now, if the behavior is undesired, then the supervisor is conditioning or teaching the employee that undesired behavior will lead to a desired reward. It is important therefore that the reward administered be equal to the performance input of the employee. Homans (1950) labels this as the rule of distributive justice and stated that this reciprocal norm applies in both formal (work) and informal (friendship) relationships. In other words, the employee *exchanges* his services for the rewards of the organization. In order to maintain desired performance, it is important that the manager design the reward system so that the level of reward administered is proportionately contingent on the level of performance emitted.

The *third step* is to design the contingencies in such a way that a reliable procedure for eliciting or inducing the desired response patterns is established; otherwise, if they never occur there will be few opportunities to influence the

desired behavior through contingent management. If the behavior that a manager wishes to strengthen is already present, and occurs with some frequency, then contingent applications of incentives can, from the outset, increase and maintain the desired performance patterns at a high level. However, as Bandura (1969) states, "When the initial level of the desired behavior is extremely low, if the criterion for reinforcement is initially set too high, most, if not all, of the person's responses go unrewarded, so that his efforts are gradually extinguished and his motivation diminished (p. 232)."

The nature of the learning process is such that acquiring the new response patterns can be easily established. The principle of operant conditioning says that an operant followed by a positive reinforcement is more likely to occur under similar conditions in the future. Through the process of *generalization*, the more nearly alike the new situation or stimulus is to the original one, the more the old behavior is likely to be emitted in the new environment. For example, if you contract with an electrician to rewire your house, he is able to bring with him enough old behavioral patterns which he generalized to this unfamiliar, but similar, stimulus setting (the house) in order to accomplish the task. He has learned through his past reinforcement history that, when in a new environment, one way to speed up the correct behavior needed to obtain reward is to generalize from similar settings with which he has had experience. Perhaps one reason an employer wants a person with work experience is because the probability of that person emitting the correct behavior is greater and thus the job of managing that person simplified.

Just as generalization is the ability to react to similarities in the environment, *discrimination* is the ability to react to differences in a new environmental setting. Usually when an employee moves from one environment (a job, a city, an office) to another he finds that only certain dimensions of the stimulus conditions change. While all of the responses of the employee in this new setting will not be correct, by skilled use of the procedures of reinforcement currently being discussed, we can bring about the more precise type of stimulus control called discrimination. When we purchase a new car, we do not have to relearn how to drive a car (generalizable stimulus). Instead we need only learn the differences in the new car and the old car so that we can respond to these differences in order to get reinforced. This procedure is called *discrimination training*. "If in the presence of a stimulus a response is reinforced, and in the absence of this stimulus it is extinguished, the stimulus will control the probability of the response in high degree. Such a stimulus is called a *discriminative stimulus* (Michael and Meyerson, 1962)."

The development of effective discriminative repertoires is important for dealing with many different people on an interpersonal basis. Effective training techniques will allow the supervisor to develop the necessary discriminative repertoires in his new employees (e.g. see Bass and Vaughan, 1966, *Training in Industry: The Management of Learning*).

Using the principles of generalization and discrimination in a well-designed training program allows the manager to accomplish the third goal of eliciting

or inducing the desired response patterns. Training is a method of *shaping* desired behavior so that it can be conditioned to come under the control of the reinforcement stimuli. Shaping behavior is necessary when the response to be learned is not currently in the individual's repertoire and when it is a fairly complex behavior. In shaping, we teach a desired response by reinforcing the series of successive steps which lead to the final response. This method is essentially the one your parents used when they first taught you to drive. You were first taught how to adjust the seat and mirror, fasten the seat belt, turn on the lights and windshield wipers, and then how to start the engine. Each time you successfully completed each stage you were positively reinforced by some comment. You then were allowed to practice driving on back roads and in empty lots. By focusing on one of these aspects at a time and reinforcing proper responses, your parents were able to shape your driving behavior until you reached the final stage of being able to drive. After your behavior was shaped, driving other cars or driving in new territories was accomplished successfully by the process of generalization and discrimination. This same process is used with a management trainee who is rotated from department to department for a period of time until he has "learned the ropes." After his managerial behavior has been minimally shaped, he is transferred to a managerial position where, using the principles of generalization and discrimination, he is able to adjust to the contingencies of the work environment.

Avoidance Learning The second type of contingency arrangement available to the manager is called escape, or avoidance learning. Just as with positive reinforcement, this is a method of strengthening desired behavior. A contingency arrangement in which an individual's performance can terminate an already noxious stimulus is called *escape* learning. When behavior can prevent the onset of a noxious stimulus the procedure is called *avoidance learning*. In both cases, the result is the development and maintenance of the desired operant behavior (Michael and Meyerson, 1962).

An example of this kind of control can be easily found in a work environment. Punctuality of employees is often maintained by avoidance learning. The noxious stimulus is the criticism by the shop steward or office manager for being late. In order to avoid criticism other employees make a special effort to come to work on time. A supervisor begins criticizing a worker for "goofing off." Other workers may intensify their efforts to escape the criticism of the supervisor.

The arrangement of an escape reinforcement contingency can be diagrammed as follows:

Noxious stimulus → Desired response → Removal of noxious stimulus
($S^- \rightarrow R \not\rightarrow S^-$)

The distinction between the process of strengthening behavior by means of positive reinforcement techniques and avoidance learning techniques should

be noted carefully. In one case, the individual works hard to gain the consequences from the environment which results from good work, and in the second case, the individual works hard to avoid the noxious aspects of the environment itself. In both cases the same behavior is strengthened.

While Skinner (1953) recognizes that avoidance learning techniques can be used to condition desired behavior, he does not advocate their use. Instead a Skinnerian approach to operant conditioning is primarily based on the principles of positive reinforcement.

Extinction While positive reinforcement and avoidance learning techniques can be used by managers to strengthen desired behavior, extinction and punishment techniques are methods available to managers for reducing undesired behavior. When positive reinforcement for a learned or previously conditioned response is withheld, individuals will continue to exhibit that behavior for an extended period of time. Under repeated nonreinforcement, the behavior decreases and eventually disappears. This decline in response rate as a result of nonrewarded repetition of a task is defined as *extinction*.

The diagram of the arrangement of the contingency of extinction can be shown as follows:

(1) Stimulus → Response → Positive consequences
(S → R → R^+)

(2) Stimulus → Response → Withholding of positive consequences
(S → R ↛ R +)

(3) Stimulus → Withholding of response
(S ↛ R)

The behavior which was previously reinforced because (a) it was desired or (b) by poor reinforcement practices is no longer desired. To extinguish this behavior in a naturally recurring situation, response patterns sustained by positive reinforcement (Stage 1) are frequently eliminated (Stage 3) by discontinuing the rewards (Stage 2) that ordinarily produce the behavior. This method when combined with a positive reinforcement method is the procedure of behavior modification recommended by Skinner (1953). It leads to the least negative side effects and when the two methods are used together, it allows the employee to get the rewards he desires and allows the organization to eliminate the undesired behavior.

Punishment A second method of reducing the frequency of undesired behavior is through the use of punishment. Punishment is the most controversial method of behavior modification, and most of the ethical questions about operant methods of control center around this technique. "One of the principal objections to aversive control stems from the widespread belief that internal, and often unconscious, forces are the major determinant of behavior. From this

perspective, punishment may temporarily suppress certain expressions, but the underlying impulses retain their strength and press continuously for discharge through alternative actions (Bandura, 1969, p. 292)." While Skinner (1953) discounts the internal state hypothesis, he recommends that extinction rather than punishment be used to decrease the probability of the occurrence of a particular behavior.

Punishment is defined as presenting an aversive or noxious consequence contingent upon a response, or removing a positive consequence contingent upon a response. Based on the Law of Effect, as rewards strengthen behavior, punishment weakens it. This process can be shown as follows:

(1) Stimulus → Undesired behavior → Noxious consequence or withholding of positive consequence
(S → R → R^-)
(or ↛ R^+)

(2) Stimulus → Undesired behavior
(S ↛ R)

Notice carefully the difference in the withholding of rewards in the punishment process and the withholding of rewards in the extinction process. In the extinction process, we withhold rewards for behavior that has previously been administered the rewards because the behavior was desired. In punishment, we withhold a reward because the behavior is undesired, has never been associated with the reward before, and is in fact a noxious consequence. For example, if your young son began imitating an older neighborhood boy's use of profanity and you thought it was "cute," you might reinforce the behavior by laughing or by calling public attention to it. Soon, the son learns one way to get the recognition he craves is to use profanity—even though he may have no concept of its meaning. As the child reaches an accountable age, you decide that his use of profanity is no longer as cute as it once was. To stop the behavior you can do one of three things: (1) You can withhold the previous recognition you gave the child by ignoring him (extinction), (2) You can give the child a spanking (punishment by noxious consequence), or (3) You can withhold his allowance or refuse to let him watch television (punishment by withholding of positive consequences not previously connected with the act.)

It should be noted that method 2 and perhaps method 3 would be considered cruel because of the parent's own inconsistencies. Punishment should rarely be used to extinguish behavior that has previously been reinforced if the person administering the punishment is the same person who previously reinforced the behavior. However, had the parent failed to extinguish the use of profanity prior to sending the child out in society (e.g. school, church), it is possible that the society may punish the child for behavior that the parent is reinforcing or at least tolerating. It is often argued therefore that the failure to use punishment early in the life of a child for socially unacceptable behavior (e.g. stealing, driving at excessive speeds, poor table manners) is more cruel than the pun-

ishment itself, simply because the society will withhold rewards or administer aversive consequences for the behavior which the parents should have extinguished.

The use of aversive control is frequently questioned on the assumption that it produces undesirable by-products. In many cases this concern is warranted. Bandura (1969) states that it depends on the circumstances and on the past reinforcement history of the reinforcement agent and the reinforcement target as to whether punishment or extinction should be used. He says:

> Many of the unfavorable effects, however, that are sometimes associated with punishment are not necessarily inherent in the methods themselves but result from the faulty manner in which they are applied. A great deal of human behavior is, in fact, modified and closely regulated by natural aversive contingencies without any ill effects. On the basis of negative consequences people learn to avoid or to protect themselves against hazardous falls, flaming or scalding objects, deafening sounds, and other hurtful stimuli. . . . In instances where certain activities can have injurious effects, aversive contingencies *must* be socially arranged to ensure survival. Punishment is rarely indicated for ineffectiveness or deleterious side effects when used, for example, to teach young children not to insert metal objects into electrical outlets, not to cross busy thoroughfares . . . Certain types of negative sanctions, if applied considerately, can likewise aid in eliminating self-defeating and socially detrimental behavior without creating any special problems (p. 294).

Rules for Using Operant Conditioning Techniques

Several rules concerning the arrangement of the contingencies of reinforcement should be discussed. While these rules have common sense appeal, the research findings indicate that these rules are often violated by managers when they design control systems.

Rule 1. Don't reward all people the same. In other words, differentiate the rewards based on performance as compared to some defined objective or standard. We know that people compare their own performance to that of their peers to determine how well they are doing ("Social Comparison Theory," Festinger, 1954) and they compare their rewards to the rewards of their peers ("Equity Theory," Adams, 1965) in order to determine how to evaluate their rewards. While some managers seem to think that the fairest system of compensation is one where everyone in the same job classification gets the same pay, employees want differentiation so that they know their importance to the organization. Based on social comparison and equity theory assumptions, it can be argued that managers who reward all people the same are encouraging, at best, only average performance. Behavior of high performance workers is being extinguished (ignored) while the behavior of average performance and poor performance workers is being strengthened by positive reinforcement.

Rule 2. Failure to respond has reinforcing consequences. Managers who find the job of differentiating between workers so unpleasant that they fail to respond must recognize that failure to respond modifies behavior. "Indeed, whether he is conscious of it or not, the superior is bound to be constantly shaping the behavior of his subordinates by the way in which he utilizes the

rewards that are at his disposal, and he will inevitably modify the behavior of his work group (Haire, 1964)." Managers must be careful that they examine the performance consequence of their non-action as well as their action.

Rule 3. Be sure to tell a person what he can do to get reinforced. By making clear the contingencies of reinforcement to the worker, a manager may be actually increasing the individual freedom of the worker. The employee who has a standard against which to measure his job will have a built-in feedback system which allows him to make judgements about his own work. The awarding of the reinforcement in an organization where the worker's goal is specified will be associated with the performance of the worker and not based on the biases of the supervisor. The assumption is that the supervisor rates the employee accurately (see Scott and Hamner, 1973a) and that he then reinforces the employee based on his ratings (see Scott and Hamner, 1973b). If the supervisor fails to rate accurately or administer rewards based on performance, then the stated goals for the worker will lose stimulus control, and the worker will be forced to search for the "true" contingencies, i.e., what behavior should he perform in order to get rewarded (e.g., ingratiation? loyalty? positive attitude?).

Rule 4. Be sure to tell a person what he is doing wrong. As a general rule, very few people find the act of failing rewarding. One assumption of behavior therefore is that a worker wants to be rewarded in a positive manner. A supervisor should never use extinction or punishment as a sole method for modifying behavior, but if used judiciously in conjunction with other techniques designed to promote more effective response options (Rule 3) such combined procedures can hasten the change process. If the supervisor fails to specify why a reward is being withheld, the employee may associate it with past desired behavior instead of the undesired behavior that the supervisor is trying to extinguish. The supervisor then extinguishes good performance while having no effect on the undesired behavior.

Rules 3 and 4, when used in combination, should allow the manager to control behavior in the best interest of reaching organizational goals. At the same time they should give the employee the clarity he needs to see that his own behavior and not the behavior of the supervisor controls his outcomes.

Rule 5. Don't punish in front of others. The reason for this rule is quite simple. The punishment (e.g., reprimand) should be enough to extinguish the undesired behavior. By administering the punishment in front of the work group, the worker is doubly punished in the sense that he is also put out of face (Goffman, 1959). This additional punishment may lead to negative side-effects in three ways. First, the worker whose self-image is damaged may feel that he must retaliate in order to protect himself. Therefore, the supervisor has actually increased undesired responses. Secondly, the work group may misunderstand the reason for the punishment and through "avoidance learning" may modify their own behavior in ways not intended by the supervisor. Third, the work group is also being punished in the sense that observing a member of their team being reprimanded has noxious or aversive properties for most people. This may result in a decrease in the performance of the total work group.

Rule 6. Make the consequences equal to the behavior. In other words be fair. Don't cheat the worker out of his just rewards. If he is a good worker, tell him. Many supervisors find it very difficult to praise an employee. Others find it very difficult to counsel an employee about what he is doing wrong. When a manager fails to use these reinforcement tools, he is actually reducing his effectiveness. When a worker is overrewarded he may feel guilty (Adams, 1965) and based on the principles of reinforcement, the worker's current level of performance is being conditioned. If his performance level is less than others who get the same reward, he has no reason to increase his output. When a worker is underrewarded, he becomes angry with the system (Adams, 1965). His behavior is being extinguished and the company may be forcing the good employee (underrewarded) to seek employment elsewhere while encouraging the poor employee (overrewarded) to stay.

An Argument for Positive Reinforcement

Most workers enter the work place willingly if not eagerly. They have a sense of right and wrong and have been thoroughly conditioned by their parents and by society. By the time they reach adulthood, it can be assumed that they are mature. For these reasons, it is argued here as well as by others (Skinner, 1953; Wiard, 1972), that the only tool needed for worker motivation is the presence or absence of positive reinforcement. In other words, managers do not, as a general rule, need to use avoidance learning or punishment techniques in order to control behavior.

Whyte (1972) says "positive reinforcers generally are more effective than negative reinforcers in the production and maintenance of behavior" (p. 67). Wiard (1972) points out, "There may be cases where the use of punishment has resulted in improved performance, but they are few and far between. The pitfalls of punishment can be encountered with any indirect approach" (p. 16). However, a positive reinforcement program is geared toward the desired results. It emphasizes what needs to be done, rather than what should not be done. A positive reinforcement program is result oriented, rather than process oriented. A well designed program encourages individual growth and freedom, whereas negative approach (avoidance learning and punishment) encourages immaturity in the individual and therefore eventually in the organization itself.

The reason organizations are ineffective according to Skinner (1969) is because they insist on using avoidance learning or punishment techniques, and because they fail to use a positive reinforcement program in an effective manner. He says:

> The contingencies of positive reinforcement arranged by governmental and religious agencies are primitive, and the agencies continue to lean heavily on the puritanical solution. Economic reinforcement might seem to represent an environmental solution, but it is badly programmed and the results are unsatisfactory for both the employer (since not much is done) and the employee (since work is still work). Education and the management of retardates and psychotics are still largely aversive. In short, as we have seen, the most powerful forces bearing on human behavior are not being effectively used. . . . Men are happy in an environment in which active, productive, and creative behavior is reinforced in effective ways (pp. 63–64).

Schedules of Positive Reinforcement

The previous discussion was primarily concerned with methods of arranging the contingencies of reinforcement in order to modify behavior. Two major points were discussed. First, some type of reinforcement is necessary in order to produce a change in behavior. Second, a combined program of positive reinforcement and extinction are more effective for use in organizations than are programs using punishment and/or avoidance learning techniques. The previous discussion thus tells what causes behavior and why it is important information for the manager, but it does not discuss the several important issues dealing with the scheduling or administering of positive reinforcement.

According to Costello and Zalkind (1963), "The speed with which learning takes place and also how lasting its effects will be is determined by the timing of reinforcement" (p. 193). In other words, the effectiveness varies as a function of the schedule of its administration. A reinforcement schedule is a more-or-less formal specification of the occurrence of a reinforcer in relation to the behavioral sequence to be conditioned, and effectiveness of the reinforcer depends as much upon its scheduling as upon any of its other features (magnitude, quality and degree of association with the behavioral act) (Adam and Scott, 1971).

There are many conceivable arrangements of a positive reinforcement schedule which managers can use to reward workers (Ferster and Skinner, 1957). Aldis (1961) identifies two basic types of schedules which have the most promise concerning possible worker motivation. These schedules are *continuous* and *partial reinforcement* schedules.

Continuous Reinforcement Schedule Under this schedule, every time the correct operant is emitted by the worker, it is followed by a reinforcer. With this schedule, behavior increases very rapidly but when the reinforcer is removed (extinction) performance decreases rapidly. For this reason it is not recommended for use by the manager over a long period of time. It is also difficult or impossible for a manager to reward the employee continuously for emitting desired behavior. Therefore a manager should generally consider using one or more of the partial reinforcement schedules when he administers both financial and nonfinancial rewards.

Partial Reinforcement Schedules Partial reinforcement, where reinforcement does not occur after every correct operant, leads to slower learning but stronger retention of a response than total or continuous reinforcement. "In other words, *learning is more permanent when we reward correct behavior only part of the time*" (Bass and Vaughan, 1966, p. 20). This factor is extremely

relevant to the observed strong resistance to changes in attitudes, values, norms, and the like.

Ferster and Skinner (1957) have described four basic types of partial reinforcement schedules for operant learning situations. They are:

*1 **Fixed Interval Schedule*** Under this schedule a reinforcer is administered only when the desired response occurs after the passage of a specified period of time since the previous reinforcement. Thus a worker paid on a weekly basis would receive a full pay check every Friday, assuming that the worker was performing minimally acceptable behavior. This method offers the least motivation for hard work among employees (Aldis, 1961). The kind of behavior often observed with fixed interval schedules is a pause after reinforcement and then an increase in rate of responding until a high rate of performance occurs just as the interval is about to end. Suppose the plant manager visits the shipping department each day at approximately 10:00 A.M. This fixed schedule of supervisory recognition will probably cause performance to be at its highest just prior to the plant manager's visit and then performance will probably steadily decline thereafter and not reach its peak again until the next morning's visit.

*2 **Variable Interval Schedule*** Under this schedule, reinforcement is administered at some variable interval of time around some average. This schedule is not recommended for use with a pay plan (Aldis, 1961), but it is an ideal method to use for administering praise, promotions, and supervisory visits. Since the reinforcers are dispensed unpredictably, variable schedules generate higher rates of response and more stable and consistent performance (Bandura, 1969). Suppose our plant manager visits the shipping department on an *average* of once a day but at randomly selected time intervals, i.e., twice on Monday, once on Tuesday, not on Wednesday, not on Thursday, and twice on Friday, all at different times during the day. Performance will be higher and have less fluctuation than under the fixed interval schedule.

*3 **Fixed Ratio Schedule*** Here a reward is delivered only when a fixed number of desired responses take place. This is essentially the piece-work schedule for pay. The response level here is significantly higher than that obtained under any of the interval (or time-based) schedules.

*4 **Variable Ratio Schedule*** Under this schedule, a reward is delivered only after a number of desired responses with the number of desired responses changing from the occurrence of one reinforcer to the next, around an average. Thus a person working on a 15 to 1 variable ratio schedule might receive reinforcement after ten responses, then twenty responses, then fifteen responses, etc., to an average of one reinforcer per fifteen responses. Gambling is an example of a variable ratio reward schedule. Research evidence reveals that of all the variations in scheduling procedures available, this is the most powerful in sustaining behavior (Jablonsky and DeVries, 1972). In industry, this plan would be impossible to use as the only plan for scheduling reinforcement. However, Aldis (1961) suggests how this method could be used to supplement other monetary reward schedules:

> Take the annual Christmas bonus as an example. In many instances, this "surprise" gift has become nothing more than a ritualized annual salary supplement which everybody expects. Therefore, its incentive-building value is largely lost. Now suppose that the total bonus were distributed at irregular intervals throughout the year and in small sums dependent upon the amount of work done. Wouldn't the workers find their urge to work increased? (p. 63)

An important point to remember is that to be effective a schedule should always include the specification of a contingency between the behavior desired and the occurrence of a reinforcer. In many cases it may be necessary to use each of the various schedules for administering rewards—for example, base pay on a fixed interval schedule, promotions and raises on a variable interval schedule, recognition of above average performance with a piece-rate plan (fixed ratio) and supplementary bonuses on a variable ratio schedule. The effect of each of the types of reinforcement schedules and the various methods of arranging reinforcement contingencies on worker performance is summarized in Table 1.

Table 1 Operant Conditioning Summary

Arrangement of reinforcement contingencies	Schedule of reinforcement contingencies	Effect on behavior when applied to the individual	Effect on behavior when removed from the individual
	Continuous reinforcement	Fastest method to establish a new behavior	Fastest method to extinguish a new behavior
	Partial reinforcement	Slowest method to establish a new behavior	Slowest method to extinguish a new behavior
	Variable partial reinforcement	More consistent response frequencies	Slower extinction rate
	Fixed partial reinforcement	Less consistent response frequencies	Faster extinction rate
Positive reinforcement Avoidance reinforcement		Increased frequency over preconditioning level	Return to preconditioning level
Punishment extinction		Decreased frequency over preconditioning level	Return to preconditioning level

Source. Adapted from Behling et al., reprinted with permission of the author from "Present Theories and New Directions in Theories of Work Effort," *Journal Supplement and Abstract Service* of the American Psychological Corporation.

The necessity for arranging appropriate reinforcement contingencies is dramatically illustrated by several studies in which rewards were shifted from a response-contingent (ratio) to a time-contingent basis (interval). During the period in which rewards were made conditional upon occurrence of the desired behavior, the appropriate response patterns were exhibited at a consistently high level. When the same rewards were given based on time and independent of the worker's behavior, there was a marked drop in the desired behavior. The reinstatement of the performance-contingent reward schedule promptly restored the high level of responsiveness (Lovaas, Berberich, Perloff, and Schaeffer, 1966; Baer, Peterson, and Sherman, 1967). Similar declines in performance were obtained when workers were provided rewards in advance without performance requirements (Ayllon and Azrin, 1965; Bandura and Perloff, 1967).

Aldis (1961) encourages businessmen to recognize the importance of a positive reinforcement program. He also says that experimentation with various schedules of positive reinforcement is the key to reducing job boredom and increasing worker satisfaction. He concludes:

> Most of us fully realize that a large proportion of all workers hold jobs that are boring and repetitive and that these employees are motivated to work not by positive rewards but by various oblique forms of threat. . . . The challenge is to motivate men by positive rewards rather than by negative punishments or threats of punishments. . . . Businessmen should recognize how much their conventional wage and salary systems essentially rely on negative reinforcement.
>
> Thus the promise of newer methods of wage payments which rely on more immediate rewards, on piece-rate pay, and greater randomization does not lie only in the increase in productivity that might follow. The greater promise is that such experiments may lead to happier workers as well (p. 63).

MANAGEMENT AND THE DISSEMINATION OF KNOWLEDGE

Previously we defined *learning* as the acquisition of knowledge (by the process of operant conditioning), and performance as the translation of knowledge into behavior (depending on the consequences). It can be argued therefore that what managers do is disseminate knowledge to those they manage in order to gain the desired level of performance. The question that remains to be answered is "What is knowledge, i.e., what information should one disseminate to control behavior?"

There are two types of knowledge according to Skinner (1969). *Private knowledge* (Polanyi, 1960; Bridgeman, 1959) is knowledge established through experience with the contingencies of reinforcement. Skinner says, "The world which establishes contingencies of reinforcement of the sort studied in an operant analysis is presumably 'what knowledge is about.' A person comes to know that world and how to behave in it in the sense that he acquires behavior which satisfies the contingencies it maintains" (1969, p. 156). The behavior

which results from private knowledge is called *contingency-shaped* behavior. This is the knowledge which one must possess in order to perform correctly in order to get rewarded. This knowledge does not assume any awareness on the part of the person but is based entirely on the person's past reinforcement history. A person can "know how" to play golf, for example, as indicated by a series of low scores—yet it is an entirely different thing to be able to tell others how to play golf. A machine operator may be an excellent employee, but make a poor foreman. One reason may be that, while he possesses private knowledge about his job, he is unable to verbalize the contingencies to other people.

Public knowledge, then, is the ability to derive rules from the contingencies, in the form of injunctions or descriptions which specify occasions, responses, and consequences (Skinner, 1969, p. 160). The behavior which results from public knowledge is called *rule-governed* behavior.

The reason the possession of public knowledge is important to the manager is simple. The employee looks to the manager for information about what behavior is required, how to perform the desired behavior, and what the consequences of the desired behavior will be. Before a manager can give correct answers to these questions, he must understand the true contingencies himself, since his business is not in doing, but in telling others how to do. The point is to be able to analyze the contingencies of reinforcement found in the organization and "to formulate rules or laws which make it unnecessary to be exposed to them in order to behave appropriately" (Skinner, 1969, p. 166).

After living in a large city for a long time, a person is able to go from Point A to Point B with little trouble. The knowledge of how to get around in the city was shaped by the past history with the environment. This behavior is an example of contingency-shaped behavior. If a stranger arrives in the same city and desires to go from Point A to Point B he too will have little trouble. He will look at a map of the city, and follow the path specified by the map. This behavior is an example of rule-governed behavior. Whether or not a person will continue to follow the map (rule) in the future is dependent on the consequences of following the map in the past. If the rule specified the correct contingencies, he probably will continue to use the map, but if a person found the map to be in error, then he will probably look to other sources of information (e.g., asking someone with private knowledge). The same thing happens in industry. If a manager is correct in the specification of the rules, i.e., the new worker follows the rules and receives a reward, then the worker will probably follow the other rules specified by the manager. If the manager specifies incorrect rules, then the worker may look to his peers or to other sources for information (e.g., the union steward) and specification of rules which describe behavior that will be rewarded.

There are two kinds of rules the manager can specify to the employee. A command or *mand* is a rule that specifies behavior and consequences of the behavior, where the consequences are arranged by the person giving the com-

mand. The specified or implied consequences for failure to act are usually aversive in nature and the judgment of the correctness of the behavior is made by the person given the command. A foreman who tells the worker to be on time for work is giving the worker a command. The implied consequence is that if the employee fails to report on time, the foreman will take action.

Advice and warnings are called *tacts* and involve rules which specify the reinforcements contingent on prior stimulation from rules, or laws. They specify the same contingencies which would directly shape behavior (private knowledge). The specification of the tact speeds up the conditioning process. If a secretary tells her boss he should take an umbrella when he goes to lunch she is describing a tact. She has no control over the consequences (getting wet) of the behavior (not carrying the umbrella). Instead it is determined by the environment itself (weather). Skinner (1969 says:

> *Go west, young man* is an example of advice (tacting) when the behavior it specifies will be reinforced by certain consequences which do not result from action taken by the advisor. We tend to follow advice because previous behavior in response to similar verbal stimuli has been reinforced. Go west, young man is a command when some consequences of the specified action are arranged by the commander—say, the aversive consequences arranged by an official charged with relocating the inhabitants of a region. When maxims, rules, and laws are advice, the governed behavior is reinforced by consequences which might have shaped the same behavior directly in the absence of the maxims, rules, and laws. When they are commands, they are effective only because special reinforcements have been made contingent upon them (p. 148).

While a manager must possess public knowledge as well as private knowledge in order to accomplish his task of "getting things done through other people" in keeping with a plea for positive reinforcement and unbiased reward systems, tacting is the method of rule specification recommended. Skinner (1969) recommends that by specifying the contingencies in such a way that the consequences are positive in nature and failure to respond is met with the withholding of a reward rather than by aversive stimuli, "the 'mand' may be replaced by a 'tact' describing conditions under which specific behavior on the part of the listener will be reinforced (p. 158)." Instead of saying "Give me that report" say "I need the report." "The craftsman begins by ordering his apprentice to behave in a given way; but he may later achieve the same effect simply by describing the relation between what the apprentice does and the consequences" (Skinner, 1969, p. 158). Thus, the technique which managers use to direct the employee can make a lot of difference in the acceptance of the rule by the employee. A mand operates from an avoidance learning base while a tact operates from a positive reinforcement base. A tact is more impersonal and gives the employee freedom in that it does not "enjoin anyone to behave in a given way, it simply describes the contingencies under which certain kinds of behavior will have certain kinds of consequences" (Skinner, 1969, p. 158).

CONTROVERSIES SURROUNDING AN OPERANT APPROACH TO MANAGEMENT

The reinforcement approach to the study and control of human behavior has met with resistance and criticism, primarily through a lack of understanding of its recommended uses and limitations. Goodman (1964) said, "Learning theory has two simple points to make and does so with talmudic ingenuity, variability, intricacy, and insistence. They are reinforcement and extinction. What has to be left out . . . is thought."

While the criticisms would be too numerous to mention here, an attempt will be made to examine three of the major controversies surrounding an operant approach to the management of people in organizational settings.

1 *The application of operant conditioning techniques ignores the individuality of man.* Ashby (1967) said "now the chief weakness of programmed instruction is that it rewards rote learning, and worse than that—it rewards only those responses which are in agreement with the programme." Proponents of an operant approach to contingency management recognize that a poorly designed program can lead to rigidity in behavior. This is one of the major reasons that they recommend a program of reinforcement, which best fits the group or individuals being supervised. It is untrue, however, that behaviorists ignore the individuality of man. Each man is unique based on his past reinforcement history. When personnel psychologists build sophisticated selection models to predict future performance, they are actually trying to identify those applicants who will perform well under the contingencies of that particular organization. That does not mean that a person rejected cannot be motivated, but only that the current reward system of that organization is better suited for another applicant.[5]

In other words, the problem a manager faces is not to design contingencies that will be liked by all men, "but a way of life which will be liked by those who live it" (Skinner, 1969, p. 41). As Hersey and Blanchard (1972) point out, "Positive reinforcement is anything that is rewarding to the individual being reinforced. Reinforcement, therefore, depends on the individual (p. 22)." What is reinforcing to one may not be reinforcing to someone else based on the person's past history of satiation, deprivation and conditioning operations. A manager can do two things to insure that the contingencies of reinforcement are designed to support the individuality of the worker. First, as noted earlier he can strive to hire the worker who desires the rewards offered by the firm; i.e., can the person be happy or satisifed with this firm? Secondly, if it seems that the contingencies are ineffective, the manager can change the contingencies by using a democratic process—letting the employees design their own reward structure within the limits set by the organization. "Democracy is an effort to solve the problem by letting the people design the contingencies under which they are to live or—to put it another way—by insisting that the designer himself live under the contingencies he designs" (Skinner, 1969, p. 43).

In summary, therefore, it can be concluded that in a voluntary society, where man has freedom to move from one organization to another, operant methods of control should not ignore the individuality of man. Instead man should seek work where his individuality can best be appreciated and industries should select employees who can best be motivated by the contingencies available to them. It should be noted, however, that through the unethical application of conditioning principles, some employers may exploit workers. The overall evidence would seem to indicate that this is not due to the weakness in behavioral theory, but due to the weakness of man himself.

2 *The application of operant conditioning techniques restricts freedom of choice.*

> Discussion of the moral implications of behavioral control almost always emphasizes the Machiavellian role of change agents and the self-protective maneuvers of controllers. . . . The tendency to exaggerate the powers of behavioral control by psychological methods alone, irrespective of willing cooperation by the client, and the failure to recognize the reciprocal nature of interpersonal control obscure both the ethical issues and the nature of the social influence processes (Bandura, 1969, p. 85).

Kelman (1965) noted that the primary criterion that one might apply in judging the ethical implications of social influence approaches is the degree to which they promote freedom of choice. If individualism is to be guaranteed, it must be tempered by a sense of social obligation by the individual and by the organization.

Bandura (1969) noted that a person is considered free insofar as he can partly influence future events by managing his own behavior. A person in a voluntary society can within limits exert some control over the variables that govern his own choices. Skinner (1969) noted that "Men are happy in an environment in which active, productive, and creative behavior is reinforced in effective ways" (p. 64). One method of effectively reinforcing behavior is by allowing the employee some determination in the design of the reinforcement contingencies. Another method is to design self-control reinforcement systems in which individuals regulate their own activities (Ferster, Nurenberger and Levitt, 1962; Harris, 1969).

While it cannot be denied that reinforcers which are "all too abundant and powerful" (Skinner, 1966) can restrict freedom of choice, it is not true that a behavioral or Skinnerian approach is against freedom of choice; the opposite is true. As Bandura noted, "Contrary to common belief, behavioral approaches not only support a humanistic morality, but because of their relative effectiveness in establishing self-determination these methods hold much greater promise than traditional procedures for enhancement of behavioral freedom and fulfillment of human capabilities" (p. 88).

3 *Operant theory, through its advocacy of an external reward system, ignores the fact that individuals can be motivated by the job itself.* Deci (1971, 1972) among others (Likert, 1967; Vroom and Deci, 1970) criticizes behaviorists

for advocating a system of employee motivation that only utilizes externally mediated rewards, i.e., rewards such as money and praise administered by someone other than the employee himself. In so doing, according to Deci, management is attempting to control the employee's behavior so he will do what he is told. The limitations of this method of worker motivation, for Deci, is that it only satisfies man's "lower-order" needs (Maslow, 1943) and does not take into account man's "higher-order" needs for self-esteem and self-actualization. Deci states, "It follows that there are many important motivators of human behavior which are not under the direct control of managers and, therefore, cannot be contingently administered in a system of piece-rate payments" (1972, p. 218).

Deci recommends that we should move away from a method of external control, and toward a system where individuals can be motivated by the job itself. He says that this approach will allow managers to focus on higher-order needs where the rewards are mediated by the person himself (intrinsically motivated). To motivate employees intrinsically, tasks should be designed which are interesting, creative and resourceful, and workers should have some say in decisions which concern them "so they will feel like causal agents in the activities which they engage in" (Deci, 1972, p. 219). Deci concludes his argument against a contingency approach to management by saying:

> . . . It is possible to pay workers and still have them intrinsically motivated. Hence the writer favors the prescription that we concentrate on structuring situations and jobs to arouse intrinsic motivation, rather than trying to structure piece-rate and other contingency payment schemes. Workers would be intrinsically motivated and would seek to satisfy their higher-order needs through effective performance. The noncontingent payments (or salaries) would help to satisfy the workers and keep them on the job, especially if the pay were equitable (Adams, 1965; Pritchard, 1969) (1972, p. 227).

Deci levels criticism at a positive reinforcement contingency approach on the basis of four issues: (1) advocating that external rewards be administered by someone else, (2) ignoring the importance of the task environment, (3) ignoring the importance of internal rewards, and (4) advocating a contingent payment plan. Deci makes two errors, from a reinforcement theory point of view, when he advocates noncontingent equitable pay plans. First, equity theory (Adams, 1965) assumes that rewards are based on performance. If they weren't, then the pay would be equal, not equitable. Second, and more crucial, is Deci's assumption that a pay plan can be noncontingent. Bandura notes that "all behavior is inevitably controlled, and the operation of psychological laws cannot be suspended by romantic conceptions of human behavior, any more than indignant rejection of the law of gravity as antihumanistic can stop people from falling" (1969, p. 85). Homme and Tosti (1965) made the point that, "either one manages the contingencies or they get managed by accident. Either way there will be contingencies, and they will have their effect" (p. 16). In other

words, if managers instituted a pay plan that was "noncontingent," they would in fact be rewarding poor performance and extinguishing good performance (see Rules 1, 2, and 6).

The assertion that a contingency approach advocates that the rewards always be administered by someone else is false. Skinner specifically (1969, p. 158) recommends that manding behavior be replaced by tacting methods for achieving the same effect. Skinner suggested that one safeguard against exploitation is to make sure that the design of the contingencies never controls. In addition to recommending that the contingencies be so designed that they are controlled by the environment (tacting), operant theories have advocated self-control processes in which individuals regulate their own behavior by arranging appropriate contingencies for themselves (Ferster, Nurenberger and Levitt, 1962). Bandura (1969) concluded that:

> The selection of well-defined objectives, both intermediate and ultimate, is an essential aspect of any self-directed program of change. The goals that individuals choose for themselves must be specified in sufficiently detailed behavioral terms to provide adequate guidance for the actions that must be taken daily to attain desired outcomes. . . . Individuals can, therefore, utilize objective records of behavioral changes as an additional source of reinforcement for their self-controlling behavior (p. 255).

Studies which have explored the effect of self-reinforcement on performance have shown that systems which allowed workers to keep a record of their own output to use as a continuous feedback system and for reinforcement purposes helped the workers to increase their performance (Kolb, Winter and Berlew, 1968; Fox, 1966). Michigan Bell Telephone Company and the Emery Air Freight Corporation are two of several firms which are currently using self-reinforcement programs in order to increase worker motivation and performance. Both programs have been immensely successful (see *Business Week*, December 18, 1971; and December 2, 1972).

It should be noted that even though the individual is determining his own reward in the self-feedback program, the reinforcers are both externally (money, recognition, praise) and internally (self-feedback) mediated. According to Skinner (1957) and Bem (1967) the self-report feedback is a "tract" or description of an internal feeling state. In both cases, the rewards must be contingent on performance for effective control of the behavior to take place.

Deci's recommendation that jobs should be designed so that they are interesting, creative, and resourceful is wholeheartedly supported by proponents of a positive reinforcement program. Skinner (1969) warns managers that too much dependency on force and a poorly designed monetary reward system may actually reduce performance, while designing the task so that it is automatically reinforcing can have positive effects on performance. Skinner says:

> The behavior of an employee is important to the employer, who gains when the employee works industriously and carefully. How is he to be induced to do so? The standard answer was once physical force: men worked to avoid punishment or death. The by-products were troublesome, however, and economics is perhaps the first field in which an explicit change was made to positive reinforcement. Most men now work, as we say, 'for money.'
>
> Money is not a natural reinforcer; it must be conditioned as such. Delayed reinforcement, as in a weekly wage, raises a special problem. No one works on Monday morning because he is reinforced by a paycheck on Friday afternoon. The employee who is paid by the week works during the week to avoid losing the standard of living which depends on a weekly system. Rate of work is determined by the supervisor (with or without the pacing stimuli of a production line), and special aversive contingencies maintain quality. The pattern is therefore still aversive. It has often been pointed out that the attitude of the production-line worker toward his work differs conspicuously from that of the craftsman, who is envied by workers and industrial managers alike. One explanation is that the craftsman is reinforced by more than monetary consequences, but another important difference is that when a craftsman spends a week completing a given set object, each of the parts produced during the week is likely to be automatically reinforcing because of its place in the completed object (p. 18).

Skinner (1969) also agrees with Deci that the piece-rate may actually reduce performance in that it is so powerful it is most often misused, and "it is generally opposed by those concerned with the welfare of the worker (and by workers themselves when, for example, they set daily quotas)" (p. 19).

It appears therefore, that critics of operant conditioning methods misunderstand the recommendations of behaviorists in the area of worker motivation. Operant theory does advocate interesting job design and self-reinforcement feedback systems, where possible. It does not advocate force or try to control the employee's behavior by making the employee "do what he is told." It is not against humanistic morality; rather it advocates that workers be rewarded on their performance and not on their needs alone.

While other controversies about operant conditioning could be reviewed, the examination of these three issues should give the reader a flavor of the criticisms which surround the use of a contingency approach to behavioral control.

ETHICAL IMPLICATIONS FOR WORKER CONTROL

The deliberate use of positive and negative reinforcers often gives rise to ethical concern about harmful effects which may result from such practices. Poorly designed reward structures can interfere with the development of spontaneity and creativity. Reinforcement systems which are deceptive and manipulative are an insult to the integrity of man. The employee should be a willing party to the influence attempt, with both parties benefiting from the relationship.

The question of whether man should try to control human behavior is covered in a classic paper by Rogers and Skinner (1956). The central issue discussed was one of personal values. Rogers contends that "values" emerge from the individual's "freedom of choice," a realm unavailable to science. Skinner, in rebuttal, points out that the scientific view of man does not allow

for such exceptions, and that choice and the resulting values are, like all behavior, a function of man's biology and his environment. Since biology and environment lie within the realm of science, "choice" and "value" must be accessible to scientific inquiry. Skinner and Rogers are both concerned with abuse of the power held by scientists, but Skinner is optimistic that good judgment will continue to prevail. Krasner (1964) agrees with Skinner that we should apply scientific means to control behavior, but warns that behavioral control can be horribly misused unless we are constantly alert to what is taking place in society.

Probably few managers deliberately misuse their power to control behavior. Managers should realize that the mismanagement of the contingencies of reinforcement is actually self-defeating. Workers will no longer allow themselves to be pushed around, but instead will insist that the work environment be designed in such a way that they have a chance at a better life. The effective use of a positive reinforcing program is one of the most critical challenges facing modern management.

The first step in the ethical use of behavioral control in organizations is the understanding by managers of the determinants of behavior. Since reinforcement is the single most important concept in the learning process, managers must learn how to design effective reinforcement programs that will encourage creative, productive, satisfied employees. This paper has attempted to outline the knowledge available for this endeavor.

NOTES

1 The author is indebted to Professor William E. Scott, Jr., Graduate School of Business, Indiana University for sharing with him his Skinnerian philosophy.

2 Classical conditioning is also known as respondent conditioning and Pavlovian conditioning.

3 Operant conditioning is also known as instrumental conditioning and Skinnerian conditioning.

4 Parentheses added.

5 This is true because the criterion variable is some measure of performance, and performance is directly tied to the reinforcement consequences for the current employees used to derive the selection model.

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Behavior Modification on the Bottom Line

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SETTING UP A POSITIVE REINFORCEMENT PROGRAM IN INDUSTRY

Many organizations are setting up formal motivational programs in an attempt to use the principles of positive reinforcement to increase employee productivity.

A positive reinforcement approach to management differs from traditional motivational theories in two basic ways. First, . . . a positive reinforcement program calls for the maximum use of reinforcement and the minimum use of punishment. Punishment tends to leave the individual feeling controlled and coerced. Second, a positive reinforcement program avoids psychological probing into the worker's attitudes as a possible cause of behavior. Instead, the work situation itself is analyzed, with the focus on the reward contingencies that cause a worker to act the way in which he does.

A positive reinforcement program, therefore, is results-oriented rather than process-oriented. Geary A. Rummler, president of Praxis Corporation, a management consultant firm, claims that the motivational theories of such behavioral scientists as Herzberg and Maslow, which stress workers' psychological needs, are impractical. "They can't be made operative. While they help classify a problem, a positive reinforcement program leads to solutions."

STAGES IN PROGRAM DEVELOPMENT

Positive reinforcement programs currently used in industry generally involve at least four stages. The *first stage*, according to Edward J. Feeney, formerly

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