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EXTENSIONS OF NEO-HULLIAN LEARNING THEORY TO SELECTED
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EXTENSIONS OF NEO-HULLIAN LEARNING THEORY
TO SELECTED AREAS OF MANAGEMENT

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ABSTRACT

Learning theory is employed as a model for three research areas of management: (a) job redesign, (b) the Hawthorne studies, and (c) attitude formation and change toward labor unions. Analogies are drawn between learning theoretical variables and variables in each of the three research areas. Based on these analogies, a large number of predictions are deduced. Learning theory is also shown to be capable of explaining a large portion of the respective literatures in these distinct research areas. The broader theoretical functions of research integration and research guidance are demonstrated by the use of an aesthetic theoretical tool employed in a highly functional theoretical technique.

EXTENSIONS OF NEO-HULLIAN LEARNING THEORY
TO SELECTED AREAS OF MANAGEMENT

CHAPTER I

INTRODUCTION

The purpose of this paper is to demonstrate that Neo-Hullian learning theory (e.g., Capaldi, in press; Hull, 1943; Miller, 1971; Spence, 1956; Rescorla & Wagner, 1972) can be a fruitful tool for theory and research in management. Learning theory has been boldly extended to several interesting areas beyond those for which it was originally intended (e.g., attitude formation and change: see Lott & Lott, 1968, 1972; McGuire, 1957; Razran, 1938; Staats, 1975; Weiss, 1962, 1968; altruism: see Weiss, Boyer, Lombardo, & Stich, 1973; Weiss, Buchanan, Altstatt, & Lombardo, 1980; competition: see Steigleder, Weiss, Balling, Wenninger, & Lombardo, 1980; Steigleder, Weiss, Cramer, & Feinberg, 1978; conformity: see Seybert & Weiss, 1972; defection from social movements: see Weiss, 1963; social facilitation: see Cottrell, 1968; Weiss & Miller, 1971; Zajonc, 1965). These and other successful applications of learning theory to socially relevant topics have amply demonstrated the breadth

and flexibility of a powerful theoretical instrument which can elegantly predict and explain individual and social behavior in a wide variety of settings. These past accomplishments of learning theory encourage its use in management, where an articulated theory capable of predicting and explaining the behavior of individuals in the workplace is sorely needed (Pugh, 1966; Scott, 1961).

To date, several theories have been developed and used in research in management. For example, expectancy theory of work and motivation (Vroom, 1964) has been applied to leadership (House, 1971), turnover and absenteeism (Porter & Steers, 1973), social facilitation (Ferris, Beehr, & Gilmore, 1978), and job design (Aldag & Brief, 1979; Lawler, 1969). While expectancy theory has been extensively employed, critics claim that not only are the conceptual properties of the theory faulty, but also the applications of the theory in research have been defective (see, e.g., Heneman & Schwab, 1972; Mitchell, 1974). In addition, the theory's range of applicability has been cited as being restrictive (Mayes, 1978). Many have concluded that the theory itself is inadequate and in need of replacement (e.g., Hom, 1979; House, Shapiro, & Wahba, 1974; Kennedy, 1980).

It is not the purpose of the present paper to argue the merits of learning theory over other theories that have been employed in management. Instead, by demonstrating the flexibility, precision, breadth, and elegance of learning theory, readers can

witness for themselves its unique advantages for research in management.

Learning theory has been partially employed in management; however, full realization of learning theory's breadth has not occurred to date. Learning theory encompasses numerous diverse paradigms. For example, avoidance conditioning, classical defense conditioning, classical reward conditioning, instrumental escape conditioning, instrumental reward conditioning, punishment, and selective learning all differ and have their respective, theoretically derived laws. The past emphasis in management on the application of operant principles would appear to be unnecessarily limiting (cf. Davis & Luthans, 1980). The present paper will demonstrate that a broader utilization of learning theoretical principles and paradigms could prove extremely fruitful for the advancement of research in management.

Method

Technique of Theory Construction

In extending learning theoretical principles and paradigms to selected research areas in management, use will be made of substantive modeling as a technique of theory construction (see, e.g., Brodbeck, 1959; Campbell, 1920; Evans, 1973; Lachman, 1960; Oppenheimer, 1956; Weiss, 1980). In substantive modeling, a body of knowledge containing factually established laws which are integrated by a common theoretical network is extended via analogy to an area which is relatively deficient in the organized

and empirical character of its knowledge. The extension by analogy of variables in the scientific model to a research area can permit the discovery of several intriguing new variables, the prediction of numerous unique relationships, and the explanation of existing laws.

A "dictionary of analogies" or "rules of correspondence" is employed in substantive modeling. The researcher utilizes this tool in formulating and presenting the analogies drawn between the model and the research area. The variables of the model are related individually to specified variables in the research area. These analogies then function to permit the researcher to generate predictive or explanatory laws for the research area.

Once the variables of the model have been related via analogy to variables in the research area, all the relationships and laws known to exist for the variables of the model are predicted for the analogous variables in the research area without any further assumptions being required. These predictions can then be empirically scrutinized to see if they hold as laws for the research area.

It can be seen that in selecting a model, one which has experimentally verified, theoretically organized laws would be preferable to a model without such an advanced state of knowledge. This is the primary advantage of utilizing learning theoretical principles as a model; the laws in learning are empirically established and organized by theory. Another advantage is that

for this body of knowledge many of the complex interrelationships are established--at least for variables taken two or three at a time.

The present paper will employ learning theory as a model for three areas of management: (a) job redesign, particularly job enrichment; (b) the Hawthorne studies; and (c) attitude formation and change toward labor unions. In these extensions, the learning theoretical laws and principles established for individual and social behavior will be employed. This entails the inclusion of numerous, quantitatively rigorous laws (both main and interaction effects specified) in a wide variety of paradigmatic situations. In the present applications of learning theory to selected areas of management, use will be made of this wealth of learning theoretical principles and paradigms. This will be particularly evident for both job redesign and attitude formation and change toward labor unions. The landmark studies undertaken at the Hawthorne plant of the Western Electric Company, while historical, are of continuing interest in several fields. Therefore, the application of learning theory to the Hawthorne studies will entail a detailed explanation of some of the results found in this classic piece of research. In attitude formation and change toward labor unions and in job redesign, learning theory will be applied to not only explain existing data, but also to afford some intriguing, heretofore unexamined, predictions.

Analogy versus Reductionism. The use of substantive modeling as a theoretical technique does not entail a commitment to any philosophical viewpoint such as reductionism. There is nothing inherent in the present use of substantive modeling which implies that management must inevitably be "reduced" to learning, nor is such a position implicitly adhered to. Rather, the specific model applied to a given research area and substantive modeling as a general theoretical technique are solely employed for functional purposes; that is, the model can be useful in integrating, organizing, and guiding a research area in need of integration, organization, and guidance. If a theory in management was at a sufficiently advanced stage so that it contained a large amount of organized, coherent knowledge, it could be used a model to assist another area about which there was an insufficient understanding. Unfortunately, however, this state of affairs has not yet been realized in many fields of management or psychology. In contrast, learning theory does enjoy, to some degree, this considerable wealth of integrated, organized knowledge, making it an attractive model for the present functional purposes.

The Law of Effect. An empirical law of effect position is utilized throughout this paper. Vroom, in his well-known book Work and motivation (1964), observed:

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 psychology concerned with the control of human behavior. (p. 13)

While the emphasis of the present paper is in predicting and explaining rather than controlling behavior, the law of effect, which has been exceedingly useful in past research and theory, could continue to be of service in extensions of learning theory to management.

It has been predicted and firmly established "that the prompt reduction in the strength of a strong drive stimulus acts as a reinforcement" (Dollard & Miller, 1950, p. 40). This permits a researcher to specify a priori those stimuli which will function as reinforcers without implying that all reinforcers must operate in this manner (Dollard & Miller, 1950; Miller, 1959). Theoretical predictions of interest in management can be made by using an empirical law of effect in addition to the preceding conceptualization which specifies in advance those events which will function as reinforcers.

CHAPTER II

A LEARNING THEORETICAL ANALYSIS OF JOB REDESIGN

Introduction

Organizational development techniques involving modifications of jobs, making them "enriched" or "enlarged", are becoming increasingly utilized and researched in the workplace (Friedlander & Brown, 1974). Enriched jobs are those which have been redesigned so that the employee's new task includes more responsibility, autonomy, and complexity--expansion of the job's "vertical dimension" (Hackman, 1977; Herzberg, 1968). Job enlargement generally is characterized by a wider variety of tasks performed--expansion of the job's "horizontal dimension" (Herzberg, 1968). Herzberg noted that job enlargement is an older term connoting a change only in the structural breadth of a job (cf. Lawler, 1969). However, the two terms have at times been used interchangeably in the literature (see, e.g., Bishop & Hill, 1971).

Unfortunately, many job redesign programs are disbanded because they do not produce the intended effects on performance (Hackman, 1975a, 1975b; Passmore, 1979). That is, performance does not inevitably rise and top management becomes disillusioned with the program and discontinues it. Hackman (1975b), for example,

observed that "job enrichment is failing at least as often as it is succeeding" (p. 98).

The application of learning theory to job redesign permits a quite detailed explanation of some of the reasons for these programs not producing the anticipated increments in performance. An enriched task the employee is asked to engage in is defined as being more complex and challenging than previous tasks encountered. In addition, there are several potential sources of drive in the work environment. These sources of drive may be already existent prior to implementing the new program or the program itself may introduce new sources of drive into the workplace. In learning theory, the theoretical constructs drive and habit strength combine multiplicatively to determine response strength (excitatory potential). An employee switched to a novel, complex, "enriched" task could theoretically have a habit hierarchy with dominant responses that are incorrect. Since any increases in drive will energize these dominant incorrect responses, quantity and quality of performance will probably both suffer when one or more sources of drive are present. Proponents of job enrichment have cautioned that these results, predicted by learning theory, may, in fact, occur. For example, Herzberg (1968) warned implementers of job enrichment to "be prepared for a drop in performance in the experimental group [those with enriched jobs] the first few weeks" (p. 62). In addition, the observations that organizational change involving job redesign

typically results in "short-term lowered performance" (Friedlander & Brown, 1974) or a "temporary drop in productivity" (Rush, 1971) indicate that the reductions in quantity, at least, have been observed. Rush further specified that "most studies on job design and management experience in using it for motivation indicate that a drop in productivity soon results shortly after job changes are introduced" (p. 21). Such careful observations concerning performance are predicted by a learning theoretical account of job redesign. If some source of drive is existent when a job change program is implemented, then reductions in performance will likely be observed with the novel, complex task.

Quality also has been shown to be detrimentally affected when jobs are redesigned or changed. Learning theory predicts many of the results found in a unique experiment concerning job redesign. Bishop and Hill (1971) compared the effects of job enlargement--defined as a change to a wider variety of tasks and increases in responsibility, job change--in which the task's content changed without any increases in responsibility or number of tasks performed, and a control condition--in which the task was not manipulated. The results of this study demonstrated that job enlargement and job change conditions resulted in significantly lower quality (more errors) than the control condition. Additionally, the job enlargement subjects made significantly more errors than subjects who only experienced a change in jobs. Bishop and Hill attempted to explain their

results via a "double Hawthorne effect" in which job enlargement and job change subjects felt "special" while control subjects had "cause for disappointment". However, they also indicated that:

The data on quality seem confounded with task complexity and make interpretation questionable. This is illustrated by the dramatic decrement in quality that occurred under the job enlargement condition and the fact that the two levels of task complexity (job enlargement and job change) were found to show a relationship to error frequency. (pp. 179-180)

The present learning theoretical interpretation of job redesign parsimoniously explains Bishop and Hill's results. If, as it seems from their description, the job enlargement subjects encountered a more complex task in comparison to job change and control subjects, then errors were energized with a resulting decrease in quality. The greater task complexity for both job enlargement and job change workers in comparison to the control condition would also be predicted to result in deficiencies in quality as was found in this study.¹

In addition to having a general energizing effect on habit, two other properties are also attributed to drive by learning theory: (a) the sudden onset of drive punishes a contingent response; and (b) the prompt reduction of drive reinforces a contingent response (e.g., Brown, 1953; Logan, 1959; Lombardo, Libkuman, & Weiss, 1972; Spence, 1956). These additional properties of drive will also be employed and extended in the present learning theoretical analysis of job redesign. Some of

the sources of drive which might be existent in the work environment will be specified in this analysis. Particular attention will be given to those situations in which the sources of drive may be unique to a job redesign program. It should be noted, however, that many sources of drive can be present in the workplace independent of the introduction of a job redesign program (see, e.g., Meglino, 1976). Thus, undesirable responses (or desirable ones) may already occur which lead to the offset of the source of drive. Alternatively, desirable responses (or undesirable ones) may be punished by its onset; or, in general, habits will be energized by the presence of a source of drive in the work environment. However, novel problems can emerge with the introduction of a job redesign program even if a source of drive is not unique to the program since the dominant responses of the employee may be those the organization would not wish to have energized. For example, errors may be rampant, old habits can compete with learning and performing a new procedure, a low rate or speed of productivity may prevail, perhaps even dissatisfaction or frustration may occur (although dissatisfaction and frustration might be caused by the previous responses, cf. Gherrington, Reitz, & Scott, 1971).

The following observation by Rush (1971) concerning the critical factors for job redesign's success will be shown in the succeeding pages as being compatible with, and more understandable from a learning theoretical perspective:

Whether job design has any motivational impact on the worker may depend upon a number of factors that relate to the character of the work performed and the climate of the organization, as well as the nature of the personalities and the motivations of the work force. (p. 9)

The present theoretical analysis will examine some of these factors in far greater detail than most previous investigators have attempted, permitting the explanation and prediction of numerous relationships in the field of job redesign.

Social Facilitation

One area of social psychology that has enjoyed theoretical integration via the extension of learning theory is that area designated as "social facilitation" (e.g., Zajonc, 1965; Cottrell, 1968; Cottrell, Rittle, & Wack, 1967; Cottrell, Wack, Sekerak, & Rittle, 1968; Weiss & Miller, 1971). In their review of the literature concerning social facilitation, Geen and Gange (1977) indicated that "drive theory remains the most parsimonious [theory] for explaining both increments and decrements in performance in terms of a single set of constructs" (p. 1268). Social facilitation has been considered by many investigators to be the fundamental area of social psychology (Zajonc, 1965; Weiss & Miller, 1971). As such, social facilitation could also be essential to the study of organizational behavior, as could the complete extension of the drive theory of social facilitation (Weiss & Miller, 1971). Weiss and Miller extended Zajonc's original conceptualization of audience effects on learning and

performance to take advantage of the numerous learning paradigms and laws.

The drive theory of social facilitation could be significant for numerous areas of organizational behavior. Most of the work accomplished in organizations is performed in the presence of others. In some situations, these "others" are peers ("coactors"), while other conditions have employees engaging in tasks with superiors present. Cottrell's (1968) modification of Zajonc's (1965) theory specified that the drive induced by observation was socially learned and that it was prompted by an evaluative stance taken by the observer. Cottrell's theoretical modification could assist researchers in discriminating the effects of evaluative and non-evaluative audiences on work behavior. In addition, Zajonc's own distinction between learning and performance could have important practical implications for organizational behavior. Meglino (1976), for example, noted the effects of evaluative organizational climates for situations involving poorly learned tasks:

Situations where employees: are disadvantaged, lack appropriate experience, perform complex or highly variable jobs, have recently completed a training program, are newly hired or promoted, etc., are often characterized by jobs or tasks which are poorly learned. (p. 60)

Meglino further specified some elements of the workplace which may create a highly evaluative organizational climate:

Factors such as closeness of supervision, rewards or punishments based upon performance, the presence of deadlines, the presence of competition among employees, the absence of consideration and support, etc., all may contribute to an employee's perception that his or her performance is being highly evaluated. (p. 60)

By characterizing organizational climates on an evaluative dimension and by differentiating tasks on degree of complexity, Meglino was able to resolve past discrepancies in the organizational climate literature and generate some useful practical and theoretical insights. An intensive extension of the drive theory of social facilitation could be theoretically valuable for research in organizational behavior, particularly for job redesign.

One thesis of the present analysis is that social facilitation can occur, in certain circumstances, via the installation of a job redesign program. Researchers of organizational development techniques (e.g., Campbell & Dunnette, 1968; Friedlander & Brown, 1974; Huse, 1975) stress the use of careful, systematic evaluations of performance throughout an organizational development project's life. Such evaluation is also specifically prescribed when implementing job enrichment (e.g., Aldag & Brief, 1979; Hackman, 1975a, 1975b; Herzberg, 1968; Rush, 1971). These conditions can comply with the necessary conditions for producing social facilitation. (Actually debilitation of responding would be predicted to occur in this case. The term social facilitation is used in the literature to describe both increments and decrements in responding resulting from evaluative observation.) Observation

is often associated primarily with the initial stages of an organizational development program. If the harsh evaluation is discontinued, then the drive induced by the presence of others would no longer be a relevant factor. Thus, any previously exhibited decrements in performance of increments in errors should no longer occur.

Learning Paradigms

When an organizational development program such as job enrichment is implemented, it is desirable to examine the effects of the new project on employee behavior. If the effects of the program are not clearly separate from the effects of social facilitation, then increments or decrements in performance are not as reliable as would be desired. In addition, social facilitation in field settings such as the workplace is a worthy area of inquiry in its own right. A full extension of a wide variety of learning theoretical principles can contribute substantial richness to such an inquiry and guide future investigations.

Classical Conditioning

The presence of others has been shown to possess the functional characteristics of aversive drives (Geen & Gange, 1977; Weiss & Miller, 1971). In such a formulation, the drive properties induced by a severe evaluation can be associated with cues functioning as conditioned stimuli. The simplest case of a conditioned stimulus is when it is considered as an originally neutral cue.

A variety of potentially interesting conditioned stimulus analogs can be hypothesized for the workplace. In job redesign, the individual referred to as the "change agent" or consultant (the individual responsible for introducing and implementing the organizational development program) may function as a conditioned stimulus analog. Lott and Lott (1968) conceptualized persons as "discriminable stimuli" and found that responses may be conditioned to them. Their theoretical analysis and subsequent experimentation support the present supposition of a change agent functioning as a conditioned stimulus analog.

The organization itself might also function as a conditioned stimulus analog. However, after experience in an organization, many employees do not regard the organization as neutral. Rather, the organization is associated with many factors which could weight it as either positive or negative or even conflicting (see, e.g., Miller, 1944, 1959). While it might be interesting to examine attitude changes that occur toward the organization resulting from job redesign, such changes would involve counterconditioning which for present purposes make the organization an inappropriate analog for a conditioned stimulus. Similarly, the task itself might function as a conditioned stimulus analog; however, again, prior to the introduction of job redesign, the task has been associated with a variety of stimuli (e.g., boredom, fatigue, frustration, pride, monetary stimuli--particularly in a piece-rate incentive system). As previously stated, the simplest case

of a conditioned stimulus deals with a neutral cue. The change agent would appear to be best suited for functioning as a conditioned stimulus and will therefore be used as an illustrative conditioned stimulus analog. (Learning theory can, of course, deal with more complex situations—e.g., multiple cues, some of which are no longer neutral as a result of having previously been associated with pleasant or noxious stimuli. Such processes, known severally as blocking, conflict, cross-modality blocking, etc., are very adequately treated in theory and experiment [e.g., Dickinson & Dearing, 1979; Fowler, 1978; Fowler, Goodman, & DeVito, 1977; Fowler, Goodman, & Zanich, 1977; Kamin, 1968, 1969; Miller, 1944, 1959; Rescorla & Wagner, 1972]. However, the emphasis in this section will be focused on a fundamental learning paradigm: the classical conditioning of learned drives.)

Acquisition. A drive may be classically conditioned to a neutral stimulus by repeatedly associating the neutral stimulus with the aversive drive (e.g., Kalish, 1954; Miller, 1951; Paivio, 1964; Spence & Spence, 1966). The drive which is linked with the conditioned stimulus may be either primary or acquired (e.g., Miller, 1951; Weiss, 1980). If the change agent's observation of a worker is followed by aversive events (e.g., a harsh appraisal of the employee), then an analog of reinforcement would be hypothesized. A series of such associations of the change agent and aversive events would be predicted to lead to the classical conditioning of a learned drive to the change agent, and would be analogous to a

series of acquisition trials.

Significant acquisition may develop when the source of controlling function remains external to the individual (e.g., a supervisor, a change agent, or quality control inspector) after a job has been redesigned. Such external control can be seen by the employee as evaluative and therefore aversive. As such, the association of the external source of control and aversive evaluation would be posited, analogous to acquisition. Evidence cited by Rush (1971) supports this: Limiting the control which an employee has over his/her own work was reported to be a "barrier" to successful job redesign. Similarly, in an application of job enrichment, Huse and Beer (1971) indicated that "all routine final inspection was eventually turned over to the assembly workers themselves" [emphasis added] (p. 107). We can infer from this quote that some other source at first evaluated the employees' work (e.g., a quality control inspector). This combined with a more complex task (assembling an entire hot plate, previously produced via assembly line) may explain the initial decrement in performance subsequent to the job enrichment program that is displayed by the graph presented in Huse and Beer's report (p. 106).

Precise predictions can be made about different strengths of the learned drive conditioned to the change agent based on the number of acquisition trials. In learning, the strength of the learned drive is an increasing function of the number of reinforced trials (e.g., Goldstein, 1960, 1977; Kalish, 1954; Miller, 1951).

It therefore follows (if the previous analogies hold) that the ability of the change agent to function as a source of learned drive should be an increasing function of the number of times the change agent has been connected with a situation in which an employee is harshly evaluated. For example, a consultant who has excessively evaluated an employee in a derogatory fashion should be more likely to affect an employee on his/her task than a consultant who has only rarely evaluated an employee. The number of acquisition trials can also affect the change agent's power to function in an instrumental escape conditioning, avoidance, or punishment paradigm.

Extinction. In contrast to the acquisition procedure described above, the learned drive may be reduced via extinction--by presenting the conditioned stimulus repeatedly without the learned drive (e.g., Kalish, 1954; Miller, 1951). Analogously, in job redesign, social facilitation may be reduced by having the change agent cease making a severe appraisal of the employee or similarly become dissociated from unpleasant events. In essence, the change agent would be presented to the employee without the previous associations with undesirable outcomes. Thus, if the feedback by the change agent was no longer evaluative, extinction would be predicted. Alternatively, if the feedback received by the individual was directly from the task, from a machine, or via some similar mechanism, an individual such as the supervisor, change agent, or quality control inspector would be precluded from

being associated with the feedback. Therefore, the extinction of previously formed associations or a prevention of the formation of the aversive associations would be predicted. The social facilitation literature has generated data, integrated by learning theory, which contrasts help received from a socially-mediated source and a mechanical source. Shea, Routh, Cottrell, and Brecht (1973) found that a socially-mediated source of help on a task (an experimenter) suppressed a contingent response over time to a significantly greater degree than when the source of help was mechanically-mediated. The control function in management could also be viewed as "help" for the worker. If this "help" is socially-mediated, however, as when a supervisor, change agent, or inspector gives it, then it will not be sought and will be punitive since it is concomitantly associated with aversive evaluation. If it is associated instead with a mechanical process, as when it is part of the task which the worker generates for him/her self and is separate from the social process fundamental to the aversive aspect of evaluative observation, then it will no longer function as an aversive stimulus.

These predictions, derived from learning theory, are supported by prescriptions and findings in the job redesign literature. For example, Herzberg (1974) indicated that one important "ingredient" in a job enrichment program is that feedback to the employee be "direct" and "nonevaluative". Likewise, Rush (1971) emphasized the importance of direct and immediate feedback in job redesign

efforts. Rush cited a successful example of job enrichment at Texas Instruments. In this case, Rush noted that workers "now inspect their own work and rate their own performance" (p. 144). Similarly, Walton (1975) reported cases of successful work restructuring where groups engaged in "self-management" with a resulting elimination of supervisory positions altogether.

In learning, the capacity of a conditioned stimulus to function as a source of drive is a decreasing function of the number of extinction trials (e.g., Armus, 1960; Kalish, 1954). Hence, in job enrichment, a change agent's ability to elicit social facilitation should be a decreasing function of the number of times he/she has not harshly evaluated the employee. Again, we can predict differences in employee responses toward consultants based on differences among consultants in the number of extinction trials.

Counterconditioning. If the associations for the change agent, subsequent to the acquisition procedure previously described, were transformed to being with pleasant events, then the analog in learning would not be extinction but would be counterconditioning resulting in inhibition of the learned aversive drive. In learning, inhibition develops when a response incompatible with the response elicited by the learned drive is conditioned to the conditioned stimulus (e.g., Davison, 1968; Melvin & Brown, 1964; Miller, 1951; Pearce & Dickinson, 1975). For example, if the change agent were to commend the employee for several days, pride might be elicited

and could inhibit social facilitation. In the job redesign situation, it might be desirable to attempt to change the associations the employee has developed toward the consultant through counterconditioning rather than relying on extinction since learned drives can be highly resistant to extinction (see, e.g., Miller, 1951).

Summation. Summation, in which the presentation of more than one conditioned stimulus increases the strength of the learned drive (e.g., Martens & Landers, 1972; McAllister & McAllister, 1967; McAllister, McAllister, Welden, & Cohen, 1974; Miller, 1951), might be conceived of as analogous to a hypothetical situation during the analysis of a job redesign program in which there are a group of consultants who independently have observed the employee and delivered a harsh, or otherwise punitive, evaluation. The combined presence of these people observing the employee execute his/her task should result in an increase in the strength of the drive (Weiss & Miller, 1971), if the relevant analogies hold.

In addition, the strength of the drive has been shown to interact with the number of acquisition trials (e.g., Goldstein, 1960, 1977). Thus, the number of times which the consultant(s) was (were) paired with evaluation should interact with the number of consultants observing the employee in determining the effect on the employee (e.g., in instrumental escape conditioning, punishment, or performance at the enriched task).

Generalization. Another situation that can be examined in the classical conditioning of a learned drive is generalization.

The generalization of a learned drive is a function of stimulus similarity. The more similar a particular stimulus is to the original conditioned stimulus, the more the learned drive will generalize to the new stimulus (e.g., Desiderato, 1964; Miller, 1951; Siegel, Hearst, George, & O'Neal, 1968; Weiss, 1963). Thus, individuals similar to the individual who originally instigated and evaluated the job redesign program will be more inclined to elicit social facilitation than dissimilar individuals. This similarity need not be limited to physical characteristics but could include psychological similarities to the original evaluator. For example, if the change agent was from a particular department or at a particular organizational level, than all people from that department (e.g., all people from personnel) or level (e.g., all assistant vice presidents or all management personnel in general) might be sources of drive when they observe the employee performing his/her task. Alternatively, if an aversive change agent was external to the organization, then any "outsider" observing the employee could induce the learned drive.

The effects of the learning process of acquisition and the extent of the generalization of this acquisition to different types of consultants (e.g., internal or external) is an area of interest in organizational development. Hess (1978), for example, found that internal organizational development consultants were more effective in certain respects (lower absenteeism was substained) than external consultants in using a survey feedback

technique. This was thought to be partially attributed to the external consultants being more intimidating, challenging, and detached; in contrast, the internal consultants were perceived as being more accepting. Similarly, Huse (1975) indicated that generally the ineffective organizational development change agent is characterized as "insensitive" and "rejecting". A lack of systematic research and theory concerning the characteristics of effective change agents has been noted (e.g., Beer, 1976; Friedlander & Brown, 1974; Huse, 1975). Friedlander and Brown (1974), for example, observed that "the consultant's impact as a representative of a group--a group external to and possibly a threat to his client--is not often considered" (p. 331). The present theory does consider this and it provides a guide for determining the processes involved and the reasons why certain characteristics are ineffective with a job redesign program: A threatening, punitive, or similar posture of evaluation can condition a particular agent to become a learned source of noxious drive. Furthermore, this effect can generalize to consultants of a similar class--e.g., all external consultants.

A gradient of generalization, whereby stimuli are arranged by virtue of their degree of similarity to the original conditioned stimulus can be envisioned for the job redesign situation. For example, if the original change agent was the vice president of personnel, then the assistant vice president of personnel would be expected to elicit more generalized drive than the assistant's

secretary. This prediction is deduced if a greater similarity is perceived between the vice president and the assistant than between the vice president and the secretary (and if the pertinent analogies hold).² In contrast to generalization, discrimination would be predicted when the stimulus person observing the employee is quite different from the original evaluative change agent. For example, the employee's co-workers would fail to elicit any appreciable social facilitation when they observe the employee if they lack any psychological similarity to the change agent (the learned source of drive).

Weiss and Miller (1971) indicated that stimulus similarity in social facilitation might be based on "punitive power". Within the work organization, such a psychological quality might be particularly relevant. Weiss and Miller noted one way to vary the strength of the learned drive that is highly suited to the present analysis:

the observation of subjects by observers who typically exercise differential hierarchical or peer-level punitive power over them--as the observation of white collar workers by (a) managers, or (b) other white collar workers, or (c) blue collar workers (p. 47).

An individual's pay and promotional opportunities, critical attributes of the work situation according to Mikes & Hulin (1968), among other things could be associated with an evaluator's punitive power. Power and political considerations are becoming increasingly investigated in organizational behavior in general and organizational development in particular (see, e.g., Friedlander & Brown, 1974;

Greiner, 1967; Huse, 1975). The analysis of such a variable in learning theoretical terms might prove particularly timely.

Escape Conditioning

There are few things as firmly established as the empirical finding that a response which removes an aversive drive will be reinforced. In job redesign, a response which reduced the aversive evaluation the employee received would be reinforced and thereby strengthened. Alternatively, analysis could be focused on responses directed toward the classically conditioned source of drive. The previous section dealt with conditioning the learned drive to the change agent, therefore, the present section will deal with ways in which responses can be instrumental in allowing the employee to escape the change agent conditioned to function as a learned source of drive.³

To analyze the current situation via an instrumental escape conditioning paradigm, a discrete trial analog will be employed. Thus, the termination of the observation by the change agent will hypothetically be temporary, for some period of time, analogous to a discrete trial in learning.

Several escape conditioning variables affect the strength of the instrumental response in learning, for example, the type of trial, the magnitude of reinforcement, the delay of reinforcement, etc. The elaboration of analogs for these and other pertinent learning variables should extend the present learning theoretical analysis beyond a rudimentary level. The analogies for instrumental

escape conditioning variables will now be presented and enumerated for later ease of exposition.

Rules of Correspondence: Dependent Variables. An illustrative instrumental escape response analog in the work situation might be an employee filing a grievance to the union concerning the evaluative change agent. This response could be reinforced by the interruption of on-going observation by the consultant (or terminating his/her mere presence, given that the consultant has become a learned source of drive). The response might be more likely to be reinforced if the grievance was sufficiently forceful or quickly filed (possibly analogous to a correlated reinforcement procedure, see, e.g., Logan, 1960, 1961; Weiss, Boyer, Colwick, & Moran, 1971).

Grievance filing has been observed to occur in response to organizational development efforts. French, Ross, Kirby, Nelson, & Smyth (1958), for example, found that a major change in technology substantially increased the total number of grievances filed. Schuster (1979) stated that in reference to programs involving productivity improvement:

In terms of the day-to-day relationship, an effective program should result in a reduction in the number of grievances filed and the settlement of grievances at earlier stages in the grievance procedure. (p. 247)

Rush (1971) also observed that "union resistance or disinterest" can be a "barrier" to successful applications of job redesign. If the organization is not unionized, it is even possible that employees could form a union or threaten to do so to attempt to

escape the aversive source of drive. Alternatively, aggression directed toward the change agent could occur or the employee could restrict his/her output in the change agent's presence.⁴ The resistance to change literature has documented these and other behaviors occurring when change occurs in the work environment (e.g., Coch & French, 1948; French et al., 1958; Huse, 1975). For illustrative purposes, filing a grievance will be employed as an instrumental escape response analog and the strength of the tendency to file a grievance will be considered to be analogous to the learning dependent variable, response strength (1).⁵

French et al. (1958) noted that grievances may be directed at issues other than those causing the employee to file a grievance. This is in accord with Huse's (1975) observation that threats produced by organizational change need not be consciously perceived or identified by the employee. Therefore, the grievance filed by the employee need not be limited to a grievance concerning the change agent or the observation.

Rules of Correspondence: Independent Variables. A reinforced trial in learning is one in which the instrumental response terminates the aversive drive. Analogously, a reinforced trial in job redesign could be hypothesized as filing a grievance resulting in the termination of observation by the change agent for that particular "trial"--some period of time (2). Alternatively, a non-reinforced trial analog could be the situation in job redesign in which filing a grievance does not interrupt the aversive observation

by the change agent (3). A series of trials in which the employee files a grievance without any effect on the change agent's observation would be analogous to extinction (4). A mixture of trials in which filing a grievance at times affects the change agent's observation and at times does not would be analogous to partial reinforcement (5).

Delay of reinforcement in learning focuses on the time interval between the response and the reinforcement, in this case the time lag between filing a grievance and the cessation of the change agent's observation (6). All of the previously developed classical conditioning operations which affect the strength of the aversive drive may be used here to vary the intensity of the drive. An example of particular interest is when a group of change agents evaluate the employee (7). In addition, the harshness of the change agent's evaluation or the extent of the punitive consequences associated with the change agent's evaluation could be conceived of as an analog of drive intensity. Illustratively, a change agent making a negative evaluation in front of an employee's peers would be considerably more noxious than such an evaluation made in private (8). Hamner (1977) delineated six rules for managers when utilizing reinforcement principles. One of the proscriptions which Hamner presented concerned reprimanding the employee in front of other people. The rationale for this proscription was that it could increase "undesirable responses". The present analysis expands on Hamner's explication of the effects of such a reprimand (or evaluation); in contrast to a private reprimand (or evaluation),

a public censure would be highly aversive.

Some researchers of organizational behavior have noted that certain types of individuals may not respond positively to enriched tasks (e.g., Hackman & Lawler, 1971; Hackman & Oldham, 1975; Hulin & Blood, 1968). An individual difference variable has been postulated for those persons not desiring to grow in their work or be challenged, identified as "low growth need strength" (Hackman & Oldham, 1975). The origin of discrepancies among individuals in growth need strength may be explained by the present theory by relying on a differentiation in past socialization experiences. If an employee has associated evaluative observation in an organization or outside of it with highly aversive consequences, then a program incorporating frequent observations should not be desired by such an individual. Individuals defined as low in growth need strength might find the observation particularly obnoxious based on their past learning history. In other words, low growth need strength may be an analog of high drive intensity (9). Individual difference variables have been successfully employed in learning research as sources of variation in drive intensity (e.g., manifest anxiety: Spence, 1956; Spence & Spence, 1966; competency: Steigleder, Weiss, Cramer, & Feinberg, 1978). While these past successes do not in any way guarantee the success of the present individual difference analog of drive intensity, there is ample precedent for so conceiving individual differences.

The use of a drive-reduction hypothesis of reinforcement

intertwines drive intensity and magnitude of reinforcement. In the present case, magnitude of reinforcement could be varied by having the instrumental response analog, filing a grievance, eliminate a group of consultants observing the employee, analogous to a large magnitude of reward, or only one consultant, analogous to a small magnitude of reward (10). Alternatively, filing a grievance might result in cancelling a change agent's public evaluation, analogous to a large magnitude of reward, or one made privately, analogous to a small magnitude of reward (11).

In escape conditioning, the noxious drive may be present on some trials and absent on others. Such a procedure is known as intermittent shock (Franchina, 1966). An analog of the intermittent shock procedure is available for job redesign. An employee coming to work may be faced with the change agent's observation on a particular day or he/she may not (12). Indeed, in job redesign and other organizational development programs, evaluation and observation of the employee is rarely a daily or even regular phenomenon (Huse, 1975).

Predictions. In escape conditioning, response strength is an increasing function of the number of reinforced trials (e.g., Desiderato, 1964; Steigleder et al., 1978; Weiss, Lombardo, Warren, & Kelley, 1971). By combining rules of correspondence 1 and 2, it can be predicted that the strength of the tendency to file a grievance will be an increasing function of the number of times such a response has previously led to cancelling the change

agent's observation. This prediction requires no further assumptions beyond the analogies already assumed. If the analogies are correct, the relationships holding between the variables in learning should also hold for the analogous variables in job redesign.

The above prediction, based on the known effect of reinforcement in learning has not been directly tested so far by researchers of job redesign. However, Huse and Beer (1971) did observe that "initial attempts at job enrichment may be extremely difficult in unionized plants that distrust management" (p. 105). A theoretical explanation for Huse and Beer's statement can be advanced which draws on an assumed prior learning history of unionized workers. If filing grievances or making other relevant responses previously led to termination of aversive stimuli in the work environment, then reinforcement would be predicted. Therefore, a strengthening of the response which led to its termination would be predicted to occur. Thus, with a currently aversive situation such responses should be resorted to since they have been successful (reinforced) in the past.

Strength of responding in learning is a decreasing function of the number of non-reinforced trials (e.g., Bower, 1960; Weiss, Lombardo, Warren, & Kelly, 1971). Thus, rules of correspondence 1 and 3 may be combined to derive the following prediction: The strength of the tendency to file a grievance will be a decreasing function of the number of times it has not terminated the change agent's observation.

In escape conditioning, response strength is greater under continuous reinforcement than under partial reinforcement (e.g., Bower, 1960; Steigleder et al., 1978; Weiss, Buchanan, Altstatt, & Lombardo, 1971; Weiss, Lombardo, Warren, & Kelley, 1971; Woods, Markman, Lynch, & Stokeley, 1972). For job redesign, a decreased strength of tendency to file a grievance is predicted for employees who have not been completely successful in eliminating the change agent's observation in the past (the partial reinforcement group) than for employees who have always been successful in eliminating the change agent's observation when they have filed a grievance (continuous reinforcement group). This prediction is deduced through the combination of rules of correspondence 1, 4, and 5.

In learning, immediate reinforcement produces a stronger response than delayed reinforcement. Specifically, response strength in escape conditioning is a monotonically decreasing function of delay of reinforcement, and probably negatively accelerated (e.g., Fowler & Trapold, 1962; Seybert & Weiss, 1974; Steigleder et al., 1978; Weiss, Boyer, Colwick, & Moran, 1971; Weiss, Cecil, & Frank, 1973). Thus, rules of correspondence 1 and 6 may be combined to yield analogous predictions in job redesign. For example, an employee who is observed at the start of his/her day's work files a grievance. If the grievance response immediately stops the observation, a strong response will be conditioned. If a delay supervenes, there will be a concomitant decrease in the strength of the tendency to file a grievance, with longer delays

further debilitating this response. Because the function is specified as not only decreasing but also as negatively accelerated, it can be predicted that some differences between delays will more substantially affect the strength of the tendency to file a grievance than will others. Illustratively, a difference between 5 minutes delay and 10 minutes delay should have a greater effect on the grievance response than if the comparison is between 7 hours and 7 hours and 5 minutes. While this point may seem intuitively obvious, the present analysis allows the prediction of such quantitative differences via theory rather than intuition, permitting empirical scrutiny of a derived prediction.

Delay of reinforcement in escape conditioning also has been shown to interact with the number of reinforced trials in determining response strength (e.g., Fowler & Trapold, 1962; Seybert & Weiss, 1974; Weiss, Lombardo, Warren, & Kelley, 1971). By combining rules of correspondence 1, 2, and 6, it can be predicted that the delay of termination of the change agent's observation will combine multiplicatively with the number of times the change agent's observation has formerly been cancelled in determining the strength of the tendency to file a grievance.

In conditioning, increases in drive result in increases in response strength (e.g., Spence & Spence, 1966; Steigleder, Weiss, Balling, Wenninger, & Lombardo, 1980; Weiss, Rawson, & Pasamanick, 1963). An analogous prediction derived by combining rules of correspondence 1 and 9 is as follows: Employees low in growth

need strength will have a stronger tendency to file a grievance than will high growth need strength employees.

Greater magnitudes of reinforcement result in greater response strengths in escape conditioning (e.g., Lombardo, Tator, & Weiss, 1972; Nation, Wrather, & Mellgren, 1974; Steigleder et al., 1978; Trapold & Fowler, 1960). Thus, in job redesign, the strength of the tendency to file a grievance will be greater when this response eliminates a group of change agents than when it removes a single change agent (derived via rules of correspondence 1 and 10). This is specified as a complete reduction in the drive so that all of the consultants are removed. Thus, if 10 consultants are present, 10 are eliminated; if five are present, the instrumental response interrupts the observation of all five consultants. Small reductions from relatively high levels of drive are subject to somewhat different principles (see, e.g., Campbell & Kraeling, 1953; Weiss, Lombardo, Warren, & Kelley, 1971). Rules of correspondence 1 and 11 can also be combined to predict that the cessation of a public evaluation by the change agent should result in a stronger tendency to file a grievance by the employee than the cessation of a private evaluation.

In escape conditioning, magnitude of reinforcement and drive combine multiplicatively to determine response strength (e.g., Bell, Noah, & Davis, 1965). It therefore follows, if rules of correspondence 1, 9, and 10 hold, that the number of consultants evaluating the employee and the employee's growth need strength

should interact in determining the strength of the tendency for the employee to file a grievance. Similarly, rules of correspondence 1, 9, and 11, when combined, will yield the prediction that a public/private distinction in the change agent's evaluation will combine multiplicatively with growth need strength to determine the strength of the tendency to file a grievance.

Magnitude and delay of reinforcement combine multiplicatively to determine response strength in escape conditioning (e.g., Woods & Feldman, 1966). The distinction in the effects of different magnitudes of reinforcement is more pronounced at short delays, and the distinction of the effects of delay of reinforcement is greater at large magnitudes of reinforcement in contrast to small rewards. Analogous predictions are derived by combining rules of correspondence 1, 7, and 10; 1, 8, and 10; 1, 7, and 11; or 1, 8, and 11. Illustratively, one would expect to see more pronounced effects on the strength of the tendency for an employee to file a grievance for a public observation program when the delay between filing a grievance and cessation of the change agent's observation has been minimal than when that delay has formerly been lengthy.

In escape conditioning, response strength is an increasing function of the percentage of trials on which a noxious drive is present (e.g., Franchina, 1966, 1969; Seybert & Weiss, 1974; Steigleder et al., 1980; Weiss, Boyer, Lombardo, & Stich, 1973). By combining rules of correspondence 1 and 12, it can be predicted that the strength of the tendency for an employee to file a

grievance will be an increasing function of the percentage of days on which the employee is observed by the change agent.

The above predictions illustrate rather than exhaust the derivations potentially available when using escape conditioning as a model for job redesign. As can be seen, learning theory integrates a wealth of laws with an elegant specificity uncharacteristic of theorizing in job redesign. This specificity allows precise relationships to be tested so that a more thorough knowledge is feasible concerning the variables influencing the effects of evaluative observation in job redesign.

Avoidance Learning

Another learning paradigm of potential heuristic value in job redesign is avoidance learning whereby a response allows the individual to avoid rather than escape the noxious stimulus analog, in this case the change agent evaluating the employee. This procedure would involve having some cue precede the onset of the evaluation by the change agent. This cue would have regularly preceded the change agent's observation in the past so that it eventually came to signal the presence of the change agent. For example, a notice to employees might be sent the day before the consultant were to arrive. Alternatively, if the change agent were an external consultant, a specific individual from within the organization might personally inform the employees of the consultant's impending arrival (e.g., the employee's supervisor). In either of these hypothetical situations, a discrete stimulus (a memo, an individual)

would regularly precede the change agent's presence.

Upon emission of the appropriate response, observation by the change agent would be avoided for that particular "trial". Several interesting avoidance response analogs seem plausible in the field situation in addition to the one described for instrumental escape conditioning, filing a grievance. For example, absenteeism allows the worker to avoid the change agent's observation for the period of withdrawal from work (perhaps coinciding with the change agent's presence). Alternatively, quitting work avoids the change agent's observation on a more permanent basis. Lateness or accidents or injuries may also be considered as avoidance responses. Passmore (1979), for example, reported an organization that was not successful in implementing work restructuring; prior to change, injuries were at a high level. Passmore attributed this problem to "stress due to supervisory demands to increase production" (p. 321). The high level of injuries can be theoretically explained as an avoidance response to the aversive supervisory demands, similar to an avoidance response directed toward an evaluative change agent.

Most of the analogies previously drawn between escape conditioning and job redesign can be applied to the avoidance conditioning paradigm, permitting a large number of testable implications. The avoidance learning paradigm in which one situation has been associated with an aversive drive while one has not (one-way avoidance) seems closely analogous to the situation where work has been associated with evaluative observation via the job enrichment program while

the home situation is "safe". In this avoidance learning situation, increases in drive intensity facilitate the acquisition of the avoidance response (e.g., Mackintosh, 1974; Moyer & Korn, 1966). Therefore, the analogs involving drive intensity which were previously developed can be of further service in the present extension. For example, absenteeism would be facilitated to a greater degree when it permits the worker to avoid a group of consultants scheduled to evaluate the worker in contrast to the avoidance of a single evaluating consultant. Similarly, absenteeism should be facilitated to a greater degree if it permits the employee to avoid a public program of evaluation rather than a private evaluational program.

Punishment

The punishment learning paradigm can also be exploited for job redesign. An instrumental response that has already been established is suppressed in the punishment situation. In job redesign, the aversive observation by the change agent could function as a punishing stimulus.

While an arbitrary response that has been learned can be suppressed in the punishment paradigm, it might prove worthwhile to examine in an analysis of job redesign some potentially interesting responses that could be punished by arranging a contingency between a given response and aversive observation by the change agent. For example, an enriched job often has the employee engaging in several new behaviors: taking additional responsibilities (represented

through overt behaviors which the employee performs), performing an increased variety of tasks, engaging in self-monitored quality control, etc. If aversive observation by the change agent follows these novel behaviors, the situation is analogous to a punishment paradigm. Thus, even though the contingency between these new desirable behaviors and the punisher might be considered to be unintentional on the part of the implementers of the program, the effects can still be the suppression of these desirable behaviors. Hackman (1975a) alluded to such a situation occurring in an application of job enrichment. In one case, supervisors, having lost many aspects of their managerial roles, took to supervising in such an aversive manner that the previously exhibited gains in performance were no longer observed, i.e., suppressed.

In learning, a counter-intuitive result has been demonstrated for the punishment paradigm. Namely, that a response which is relatively poorly learned (one that has received relatively few rewarded trials) is more resistant to the effects of punishment than one that has received several additional reinforcements (e.g., Karsh, 1962; Miller, 1960). Thus, in job redesign, one would expect greater suppression when a change agent is observing an employee performing a response that has been repeatedly engaged in and rewarded than one that is fairly novel. For example, management may find the change agent's presence seriously disrupts the performance of consistently productive workers to a greater degree than workers who perform at a less consistently high

level of productivity. This would occur in spite of the fact that the excellent performance of the consistently productive workers has been repeatedly rewarded in the past.

In learning, it has been found that the suppression of an on-going response is an increasing function of the intensity of the punishment (e.g., Appel, 1963; Appel & Peterson, 1965; Church, Raymond, & Beauchamp, 1967). Some of the drive intensity analogs previously developed can be of service in the present extension. For example, since a public evaluation was conceptualized as more aversive than a private evaluation, a public evaluation by the change agent is predicted to suppress responding on the new task to a greater degree than a private evaluation. Similarly, the analog of drive intensity employing the number of consultants as the critical variable can be utilized. Thus, the employee's taking initiative should be suppressed to a greater extent if this response delivers a group of change agents than if one change agent is present when this response occurs.

Discussion

Many of the learning theoretical processes previously described and related by analogy to job redesign variables are predicted to affect not only the conditioning of the aversive drive to the change agent or evaluator, but may be ultimately responsible for the program's "failure". Many failures are directly attributable to implementation efforts in which the drive induced by evaluative observation is aroused. The aversive nature of the drive is

often amazingly clear, although up to this point no direct tie to drive theory had been made. Illustrative examples will now be presented and discussed.

Rush (1971), for example, cited a job enrichment failure which highlights some of the processes previously described:

A training specialist in an organization which recently tried a controlled experiment in job enrichment stated, "our first try at job enrichment was unsuccessful in changing work attitudes or gaining higher productivity. We don't consider the effort a complete failure because we've learned a lot from it--mostly about what problems we have to overcome in future efforts. One of the major impediments is supervision itself. Despite detailed instructions about introducing job changes, our supervisors wouldn't let up on their controls. Apparently they felt threatened in giving up some of their supervisory prerogatives, and they wouldn't give people the freedom to work independently by planning and controlling their own jobs." (p. 27)

Similarly, Hackman (1975a) analyzed those situations which led to job enrichment failures. He noted one particular case in which managers began "standing over their employees' shoulders and correcting each error they could find" (p. 132). The development of "resentment" in the employees being supervised in this manner as cited by Hackman is expected by the present theoretical analysis of manipulating the strength of the learned drive. If the observation was extremely harsh and punitive, as it seems to have been from the description, then a strong drive should have resulted and readily have been conditioned to the supervisors. Hackman advised that when implementing job enrichment programs "it is especially critical for management to abandon a punitive stance and to encourage free

discussion and analysis of the project as it develops" (p. 135).

He further remarked that while evaluation of a project is important:

for the evaluations to be valid and useful, top management needs to create an organizational climate in which the evaluation is viewed as an occasion for learning rather than for criticizing . . . performance and competence. (p. 137)

The present learning theoretical analysis incorporates Hackman's proscription of a "punitive stance" and his prescription for "free discussion and analysis of the project as it develops" with a network of other results found in job redesign and learning. The former (a punitive stance) elicits social facilitation in the observer's presence, thus impairing the emission of correct responses on the redesigned task) as well as perhaps conditioning dislike (see, e.g., Lott & Lott, 1968; Weiss & Miller, 1971), resentment, avoidance, etc. In contrast, a participative approach associates positive consequences with the observer through the employee's active participation in the new program and the solicitation and encouragement of his/her opinions. Thus, participation could countercondition any negative associations that have already developed toward the observer. Research and practice support the view that participation can have positive consequences when utilized in job redesign (e.g., Hackman, 1975a; Huse, 1975; Rush, 1971).⁶

In the case previously described and cited by Hackman (1975a), he noted that supervisors began evaluating their employees in an aversive manner because they found themselves in a position without

much to do. Schlesinger and Walton (1978) noted that this frequently is a problem in work restructuring; that supervisors have what they termed "freed-up capacity". Schlesinger and Walton further observed that this "freed-up capacity" could be utilized by, in essence, job redesign for the supervisors where they take on tasks that were traditionally the role of middle management. They reported, however, that

this type of transfer has tended not to happen in practice. Perhaps it is, in part, because supervisors performing middle management functions are potentially as threatening to some middle managers as workers performing supervisory roles are to some supervisors. (p. 321)

The present theory, while concentrating on job redesign for the lower-level employee, is potentially applicable to redesign for the supervisor as well.

Effectance and Conflict

"Effectance" has been extensively employed in psychological research and theorizing as an aversive motivator of behavior (e.g., Byrne, 1971; Byrne & Clore, 1967; Lombardo, Libkuman, & Weiss, 1972; Lombardo, Weiss, & Buchanan, 1972; Weiss, Boyer, Colwick, & Moran, 1971; Weiss, Lombardo, Warren, & Kelley, 1971). White (1959) originally defined the effectance motive as "an organism's capacity to interact effectively with its environment" (p. 297). The effectance motive is considered to include, among other things, a desire to have an individual's own stimulus world certain and predictable (Byrne, 1971).

Berlyne (1965) noted that stimulus properties such as "novelty", "change", "surprisingness", "incongruity", "complexity", "ambiguity", and "indistinctiveness", all involve uncertainty and conflict--"the simultaneous instigation of incompatible responses" (pp. 245-246). Theory and research have shown that conflict functions as a source of aversive drive (e.g., Brown & Farber, 1951; Dollard & Miller, 1950; Miller, 1944, 1959; Miller & Dollard, 1941; Weiss, 1963; Yelen, 1979, 1980).

As aversive motivators of behavior, effectance and conflict could be of heuristic value in research and theory in organizational behavior. Uncertainty and unpredictability occur in the workplace, often at an intense level. For the organization as the unit of study, uncertainty and unpredictability are thought to be increasing technologically, economically, legally, socially, politically, etc. (e.g., Bennis, 1966; Friedlander & Brown, 1974; Greiner, 1967; Huse & Beer, 1971; Lawrence & Lorsch, 1967). These changes are predicted to influence the "behavior" and structure of the organization as it attempts to adapt and cope with this uncertainty.

The focus of this paper is, however, on individual behavior as the unit of analysis. Uncertainty can also abound in the individual's stimulus environment (e.g., "role conflict", "role ambiguity", etc.), with ensuing consequences for individual behavior (see, e.g., McClean, 1975). For example, the individual might attempt to escape the unpredictability in the workplace by

setting up a rigid system of rules and structures to deal with the uncertainty. Such an approach at the organizational level has been identified as "bureaucracy". An individual who rigidly sets up and conforms to rules beyond those required by the organization might be identified personally by co-workers as a "bureaucrat". However, just as bureaucracy is proscribed as an organizational structure in uncertain environments (e.g., Bennis, 1966; Lawrence & Lorsch, 1967), so might it be ineffective as an individual response (cf. Schein, 1975).

If the uncertainty in the individual's work environment is ubiquitous and inescapable, then the individual may respond by resigning or, if alternate employment opportunities are unavailable, psychological stress symptoms may result (McLean, 1975). If, however, the uncertainty in the individual's environment is associated with a specific, discrete stimulus, then the prompt removal of that stimulus, as a source of drive, would be reinforcing, the presence of that stimulus would energize dominant responses, and its presence would also be capable of suppressing on-going responding.⁷

The typical routine task associated with many organizations for which job redesign programs are targeted would very likely not be associated with a high degree of uncertainty or unpredictability. In contrast, such a task might be described as extremely predictable. However, the stimulus properties of "novelty", "change", "complexity", etc., which involve conflict (Berlyne, 1965), all seem to describe

the new task in a job redesign program, particularly for the case of job enrichment. Therefore, conflict and effectance, as sources of drive, seem to be introduced into the work environment when the job enrichment program is implemented. Hackman (1975a), for example, noted that typically when job enrichment is introduced "the changes . . . create a good deal of uncertainty in the organization" described by workers as "chaos" (p. 131). Again, as was previously described for social facilitation, the combination of an elevation in general drive level (in this case, sources being conflict/effectance) and a novel task in which dominant responses are incorrect, contribute to the anticipated gains in performance not being readily apparent.

Learning Paradigms

The benefits of extending a wide variety of learning theoretical principles and paradigms beyond a rudimentary level for job redesign have been previously described and exemplified for evaluative observation as a source of drive. To illustrate the potential social richness unique to an analysis of effectance and conflict as motives, some exemplary analogies will be drawn. Many of the analogs generated for evaluative observation as the source of drive could be appropriately extended for the conflict and effectance analysis.

Classical Conditioning

Rather than contemplating the change agent as a functional conditioned stimulus analog as previously was demonstrated for

evaluative observation as a source of drive, an interesting application of the classical conditioning of conflict and effectance in job enrichment could employ the organizational development program itself as the conditioned stimulus analog.

Acquisition. If a job enrichment program was associated with uncertainty, unpredictability, change, etc. (conflict/effectance), then it is predicted that it would become a conditioned source of aversive drive since acquisition of a conditioned drive develops with repeated associations of a stimulus and an aversive drive. As such, employees would be predicted to develop a strong dislike for the program resulting from such acquisition trials and may bring pressure for the removal of the conditioned aversive program. The conditioning of attitudes such as the example of dislike used here toward a conditioned stimulus analog has been extensively treated in theory and research in learning (see, e.g., Byrne, 1971; Lott & Lott, 1968, 1972; Staats, 1975; Weiss & Miller, 1971).

Since drive strength is an increasing function of the number of acquisition trials, job enrichment programs which are associated with repeated episodes of "chaos" will be more disliked than change efforts in which the uncertainty become attenuated more quickly. Just as evaluative observation of the worker was shown to:

(a) affect performance on the redesigned task, (b) reinforce contingent escape responses, and (c) suppress punished responses, so the present analog of acquisition will be expected to influence not only the employee's attitudinal responses to the

aversively conditioned program, but also will affect behavior in (a) performance on the redesigned task, (b) escape conditioning, and (c) punishment situations.

The organizational development literature supports the hypothesis that aversive reactions can be conditioned to a change program. Researchers of organizational development have frequently noted that the commencement of a change program produces resistance behaviors in the affected employees. These resistance behaviors can take a variety of forms (see, e.g., Cartwright, 1951; Coch & French, 1948; Drazin & Joyce, 1979; French et al., 1958; Huse, 1975; Marrow, 1975; Trumbo, 1961). The change is considered to be a threat which may or may not be consciously perceived by the employee (Huse, 1975; Rush, 1971; Trumbo, 1961) and can be "extremely intense" (Huse, 1975).

In spite of the aversive associations a change program can create, learning theoretical techniques could be employed to "immunize" the worker to its aversive nature. For example, Miller's (1960) technique of increasing resistance to stress by gradually exposing the subject to the stress could be employed. Support for the successful effects of a comparable procedure was presented by Rush (1971); "To avoid problems, it was decided to move slowly and to explain fully the intent and method of the planned changes" (p. 68). It is interesting to further note the reason for this learning theoretically appropriate decision: "That first conference demonstrated that an across-the-board change would probably be

disruptive and create considerable anxiety among the work force" [emphasis added] (p. 68). In this illustration, the reason for a learning theoretically appropriate decision was also based on a learning theoretically appropriate variable: change in the work environment being analogous to an aversive source of drive. Thus, the decision of management in this illustration to "move slowly" may be interpreted according to the present analysis as wise (this was the conclusion management also made regarding this particular decision they reached) since it conceivably exposed the employees gradually to the change and therefore resulted in less detrimental effects than if the change was sudden--e.g., fewer resistance behaviors, perhaps less suppression of attendance and turnover than might have been caused by punishment, etc.

Extinction. It is predicted that with time many job enrichment programs can become less drive arousing in comparison to their initial chaotic state. Aldag and Brief (1979) observed that employees have occasionally complained that their enriched tasks have relapsed to their former, unchallenging condition. If the program is no longer associated with conflict or effectance, then an analog of extinction would be posited. (However, at the same time, the initial purposes for redesigning the task would no longer be fulfilled if the task is once again mundane.)

Extinction could also be predicted to occur simply by an elimination of the "chaos" which might exclusively be associated with the program's initial implementation. This may be a further

explication, in addition to the one previously stated, for Herzberg's (1968), Friedlander & Brown's (1974), and Rush's (1971) observations that a debilitation in performance occurs at the outset of a redesign effort.

Again, the principles of learning can be exploited. It is predicted that since strong drives are more resistant to extinction than weak ones (e.g., Miller, 1951), programs associated with lengthy periods of chaos will be more resistant to extinction than those which have been associated with uncertainty that was relatively short-lived in nature.

Counterconditioning. Perhaps, however, the extinction procedure would be too laborious for both employees and management since a strong resistance to extinction is often encountered with learned drives. A preferable procedure, therefore, might be to reduce the aversion conditioned to the job enrichment program by counterconditioning it. Perhaps, as was previously described, involving the employees by allowing them to participate in the program could countercondition their dislike for it which was produced by associations with conflict and uncertainty. For example, Rush (1971) stated that "less resistance to change is likely to result if employees contribute ideas to the planning of the changes and participate in implementing them" (p. 30). Such participation in an organizational development program can occur at various levels and stages (see, e.g., Coch & French, 1948; Huse, 1975). For example, the participation could be complete and begin in a stage at which

decisions are made concerning how the job should be enriched. In a classic field experiment, Coch and French (1948) found that resistance to change developed in a control group which was not allowed to participate in designing changes in work routines and time allowances to a much greater extent than in experimental groups which participated in the change. In addition, experimental groups which were allowed to fully participate in designing the changes showed less resistance than an experimental group which had less participation breadth. Resistance behaviors that were observed included turnover, low efficiency ratings, aggression, restriction of production, lack of cooperation, and grievances. The present learning theoretical analysis allows an examination of the situations in the Coch and French experiment as well as a variety of hypothetical situations in which participation could have differential effects on employee responses. If the participation was extremely rewarding, it should more greatly inhibit the aversive drive conditioned to the program. It can be hypothesized that total participation would be more rewarding than limited participation. Thus, for example, total participation would be predicted to more effectively countercondition the dislike developed toward the program than would limited participation.

Reinstatement. One other learning procedure which might be interesting to examine in the present analysis is reinstatement of the learned drive by presentation of the unconditioned stimulus after it has been extinguished (Rescorla & Heth, 1975). For job

enrichment, this would be predicted to occur if the chaos associated with the program reappeared sometime after being absent. This might occur if some change took place because of the outcomes of the program or purely due to the natural cycle of events involved in the program. Whatever its cause, the renewed unpredictability and conflict would be predicted to re-arouse the extinguished dislike for the program.

Escape Conditioning

Some of the potentially interesting responses which employees make which are instrumental in permitting them to escape from the uncertainty and conflict produced by a job enrichment program can be delineated. Examples of resistance behaviors documented in the literature include strikes, slowdowns, unionization, increased errors, absenteeism, turnover, grievances, insubordination, loss of loyalty to the company, low efficiency, aggression, etc. (see, e.g., Coch & French, 1948; Huse, 1975). Some of these responses may be more effectively employed as instrumental escape behaviors in the present analysis, others might more appropriately be analyzed via an avoidance learning paradigm.

The reinforcement in escape conditioning need not be limited to the procedure of drive reduction utilized previously. Reinforcement in escape conditioning can also occur through a procedure in which the subject emits a response which inhibits the anxiety or noxious stimulus induced by the aversive drive (e.g., Miller, 1951; Weiss, 1980). Analogously, in the area of job enrichment, a response

which inhibits the uncertainty or conflict associated with the new program should be reinforced. An illustrative response that is discussed in the job enrichment literature might be termed "job growth". When a job becomes intrinsically appealing to the worker so that it elicits feelings of pride, knowledge, responsibility, meaningfulness, etc. (compatible with Hackman & Oldham's, 1975, "critical psychological states"--"experienced meaningfulness of work", "experienced responsibility for work outcomes", and "knowledge of results of work activities"), these responses could inhibit those responses induced by the program itself since it has become a source of aversive drive. If one of these inhibiting responses was made contingent upon an instrumental response, then that response should be reinforced. It is hypothesized by proponents of job enrichment programs that such inhibitors will eventually be elicited by the redesigned, more complex task (e.g., Hackman & Lawler, 1971; Hackman & Oldham, 1975; Herzberg, 1968, 1974). If this assertion is valid, then the variables influencing this process can be specified and the results can be predicted by the use of learning theory. For example, the effects of delay of reinforcement, magnitude of reinforcement, etc., could be predicted for these responses in a manner similar to that previously done for evaluative observation.

Rules of Correspondence: Dependent Variables. As with aversive observation, the instrumental escape response may be directed at removing the source of drive that has been classically conditioned to the job enrichment program. Just as filing a grievance was previously

examined as an instrumental response analog for escaping evaluation by a change agent, so could filing a grievance be instrumental in interrupting a program associated with effectance or conflict. Alternatively, a restriction of output or slowdown by the employees could result in temporary (or permanent) cessation of the program. Again, the discrete trials analog will be employed; therefore, the program will be considered as being interrupted for some period of time, analogous to a trial in learning. The response employed for illustrative purposes will be restriction of output, and the strength of the tendency to restrict output will be used as an analog of response strength.

Rules of Correspondence: Independent Variables. Some illustrative independent variables can also be generated. Corresponding to a reinforced trial in learning would be a trial on which restricting output interrupted the program. A non-reinforced trial analog is afforded by the situation in which restricting output does not affect the cessation of the job enrichment program. Extinction, partial reinforcement, and continuous reinforcement analogs are obvious extensions of reinforced and non-reinforced trial combinations.

As previously discussed, intensity of the aversive drive which the program elicited could be manipulated by the number of acquisition trials--the extent of the association with "chaos". Similarly, the extent to which the program's uncertainty permeates the employee's entire work environment could function as an analog of drive intensity. For example, the uncertainty may comprise utter chaos, thus

functioning as an analog of high drive intensity, or it might be abbreviated to one particular task which the employee performs, thus being analogous to low drive intensity.

The variable of growth need strength might also be employed as a drive intensity variable for conflict/effectance. Perhaps individuals with low growth need strength have a low tolerance for uncertainty in the work environment in addition to or instead of being intolerant to having their performance on a task observed. Unfortunately, the literature on growth need strength does not permit the determination of which of these explanations might more suitably represent this variable. In fact, the general utility of growth need strength as an individual difference moderator of responses to job enrichment has been questioned (O'Reilly, Parlette, & Bloom, 1979). The interested reader is referred to Spence and Spence (1966) for their conclusions concerning the difficulty in formulating comprehensive and explicit theories of specific personality characteristics. Their observations seem particularly appropriate for growth need strength since the situation for which this variable is relevant, the application of job enrichment, is itself currently poorly understood. Spence and Spence concluded that when such a state of affairs exists, a theory about the situation itself is necessitated. The present learning theoretical analysis, while not offered as a comprehensive theory of growth need strength, is an attempt to incorporate such a personality variable into a broader theoretical network.

An individual difference variable that has already been more firmly grounded in theory and research is locus of control. Feinberg, Miller, Weiss, Steigleder, and Lombardo (in press) demonstrated that unpredictability leads internal locus of control individuals (whose dominant mode of responding is active, and who tend to rely on skill and ability in determining their outcomes) to active responding, while leading individuals identified as external locus of control (whose dominant mode of responding is passive, and who tend to rely on luck or chance in determining their outcomes) to passively respond; i.e., "learned helplessness". Based on the findings of Feinberg and his colleagues, it can be hypothesized that external locus of controls would find the uncertainty connected with a job enrichment program very debilitating and they could demonstrate a learned helplessness type of effect, while internal locus of control individuals could "shine" in such a turbulent environment. This individual difference variable, locus of control, however, is not conceptualized as a drive intensity analog but is a conceptualization of habit hierarchy (Feinberg et al., in press). Therefore, the main effect locus of control is predicted to have concerns task performance rather than affecting escape conditioning or punishment. As a source of drive, uncertainty is predicted to influence the internal locus of control individual's ability to master their new, complex task by energizing a dominant active response tendency. By energizing a dominant passive response tendency, uncertainty is predicted to create "helpless" externals.

An individual difference variable could also be created in the work environment itself--task competency. Employees who are made to feel competent in the job enrichment program may find the uncertainty in their environment less arousing than will employees who are made to feel incompetent. Thus, competency is used in this case as a drive intensity analog. Just such a learning-theoretical analysis of competency has been made by Steigleder et al., 1978. Although a feeling of competency could be imposed on the employee by another person (e.g., a supervisor, consultant, quality control inspector), it could also be self-imposed or could simply be due to a perceived or actual lack of ability concerning the task requirements of the redesigned job.

Predictions. Some illustrative predictions can be made given that the above analogies hold. For example, since increases in drive result in increases in response strength, an employee would have a stronger tendency to restrict his/her output if a program had been associated with considerable uncertainty over a long period of time than if that uncertainty was minor and/or brief. Since in escape conditioning continuous reinforcement results in a greater response strength than partial reinforcement, an employee who was always successful in interrupting the program by restricting his/her output (continuous reinforcement analog) will have a stronger tendency to restrict output than an employee who was only partially successful on previous occasions in

interrupting the program (analog of partial reinforcement). However, since partial reinforcement also produces a greater resistance to extinction than continuous reinforcement (e.g., Bower, 1960; Miller, 1951), an employee who was not constantly successful in interrupting the program by restricting output would be more resistant to extinction than one who always was successful. With competency of the employee as a drive intensity analog, it can also be predicted that employees made to feel incompetent would have stronger tendencies to restrict their output than employees made to feel competent.

Avoidance Conditioning

If employees will learn to make a response to escape the job enrichment program which has become a learned source of drive, they should learn to avoid it as well. Avoidance responses in the forms of tardiness, absenteeism, increased accidents, or turnover could occur. The cue which precedes the avoidance response need not be limited to an external stimulus. Responses and drive themselves produce characteristic stimuli to which avoidance responses can be conditioned (see, e.g., Brown, 1953; Dollard & Miller, 1950; Miller, 1959). For example, the mere thought of the job enrichment program with its accompanying uncertainty, complexity, unpredictability, disorder, and chaos could lead the employee to call in sick to avoid the situation. Alternatively, quitting the job and thereby avoiding the aversive program on a permanent basis could ensue. Coch and French (1948), for example, found that

the rate of quitting in a control group which did not enjoy the benefits of participation was 17% in the first 40 days after work related changes were introduced. In comparison, experimental groups with varying levels of participation had no turnover during this same period of time. (The reader is referred to earlier material concerning the counterconditioning hypothesized to result from participation.)

Just as the law from one-way avoidance learning in which increases in drive intensity facilitate avoidance learning was used for evaluative observation as a source of drive, so can it be extended for the present analysis of effectance and conflict. It can therefore be predicted that if competency of the employee functions as a drive intensity analog, employees feeling incompetent with their enriched job would have stronger tendencies to call in sick than employees feeling competent. Alternatively, if a program has been associated with an excessive degree of "pandemonium", employees will have a strong tendency to absent themselves from this aversive situation.

Punishment

If the job enrichment program has become conditioned to function as an aversive source of drive, then it should be functionally capable of punishing responses that the employee might otherwise make in the work environment. The organization may unwittingly suppress an employee's attendance since the aversive program is experienced contingent upon the worker making this attendance response.

Alternatively, an employee's enjoyment of and satisfaction with his/her job may be suppressed if the job enrichment program has become a source of aversive drive. Results compatible with such predictions have been found in the job redesign literature. Rush (1971), for example, reported a case in which a control group without enriched jobs was more satisfied with their jobs than were experimental groups with enriched jobs. Management found these results surprising, but if the program was associated with aversive events it could have functioned to punish satisfaction responses in the experimental groups. While these aversive events may not have been limited to or even included conflict or effectance as sources of aversive drive, the present analysis has attempted to show that multiple sources of aversive drive can potentially be introduced concomitant with a job redesign effort.

Since suppression of responding is an increasing function of the intensity of the punishment, the analog of acquisition developed earlier can be of service: A program associated with substantial conflict and effectance is predicted to become highly aversive. Therefore, employees experiencing a program than has been completely chaotic should show greater suppression of attendance or satisfaction than employees experiencing a less disorderly program.

Competition

As was previously stated, it is possible that sources of drive other than those originating from evaluation, effectance or conflict could be connected with a job redesign effort. For example, the

program may spur employees to compete with each other. Competition has been shown to possess the functional attributes of aversive drives (Steigleder et al., 1980; Steigleder et al., 1978). Rush (1971) reported a case of job redesign in which competition developed concerning the goals set by the workers for higher productivity. He observed that the workers "soon realized, however, that the goals were too challenging, and set more realistic ones" (p. 74). Rush further noted that attempts were made to "promote cooperation". If competition was introduced in the work environment, performance on a redesigned task would be expected to be impaired rather than facilitated. Unfortunately, Rush presented no data concerning performance during this competitive episode although he did report an "initial drop in productivity". We might further infer that performance was detrimentally affected by Rush's previously quoted statement that "the goals were too challenging".

Competition, as an aversive source of drive, could become associated with the program itself or some other stimulus in the work environment. As a consequence of such conditioning, the stimulus associated with competition would develop the capacity to affect performance on the redesigned task, to serve as a negative reinforcer which would be escaped or avoided, and to be capable of suppressing behavior. An illustration of how competition could occur in job redesign might be illuminating; a specific employee in a work group might take a job enrichment program as an occasion for competing with fellow workers rather than for "growing" on the job.

If this competitive employee had no prior conditioned associations (positive or negative) and was, therefore, functionally neutral, a conditioned stimulus analog can be posited. If, prior to job enrichment, positive affective consequences were associated with the now-competitive employee, a counterconditioning analog is plausible. This employee, by being paired with competition, might become the victim of aggression if such a response successfully terminated the competition.

Conformity

Nonconformity has also been analyzed in learning theoretical terms. Finding oneself in the position of being a nonconformist has been shown to function as an aversive drive and subjects will learn to escape such a situation (Seybert & Weiss, 1974). If the introduction of a job redesign program places an employee in a situation in which he/she becomes a nonconformist, this should be aversive. The program itself may be associated with this source of aversive drive or the work group could become aversive. The employee could, for example, escape or avoid the work group, performance on the redesigned task could be affected by the work group's presence, and their presence could become punishing.

The hypothetical nonconformity situation might occur in job redesign if a production norm develops with the new task which the employee cannot achieve. The employee could respond by increasingly being absent from work, quitting the job, filing a grievance, or perhaps even applying for a transfer into another work group.

Learning theory predicts that a job redesign program which is associated with nonconformity will be escaped or avoided--i.e., "resisted". Utilizing data from group dynamics research, Cartwright (1951) developed a principle which supports this learning theoretical prediction: "Efforts to change individuals or subparts of a group which, if successful, would have the result of making them deviate from the norms of the group will encounter strong resistance" (p. 389).

General Discussion

The preceding analysis has focused on how aversive sources of drive could become connected to different aspects of a job redesign effort, specifically the change agent, the program itself, or even a worker or a work group. The effects of this conditioning on the illustrative responses of submitting grievances, restricting output, turnover and absenteeism, etc., were also delineated. There are particular factors, which, if present in the workplace, will prevent the development of the learned drive to a change agent, the program, a worker, or a work group. The principles governing the operation of these factors will now be discussed.

Compound Conditioning

The classical conditioning of a learned drive depends not only upon a given stimulus' own association with a drive (primary or acquired), but also the association between the drive and other stimuli present in the environment. These other stimuli may "compete" with a particular stimulus so that in spite of a connection, no conditioning will develop. In learning, a procedure referred to

as "blocking" has been investigated (e.g., Kamin, 1968, 1969; Rescorla & Wagner, 1972; Wagner, 1969). In blocking, conditioning will not develop to one stimulus if that stimulus is paired with another cue which already signals the aversive drive. This procedure might be usefully examined for job redesign as well. For example, a change agent may fail to become a learned source of drive even though that change agent has consistently delivered punitive, harsh evaluations of the worker. This would be predicted to occur if another person such as the employee's supervisor, functioning as a conditioned stimulus analog, was present with the change agent when the aversive evaluation was made and the supervisor had previously evaluated the employee on successive occasions in a harsh, or otherwise noxious manner. In essence, since the supervisor has repeatedly been associated with evaluative observation, he/she would already function as a reliable source of aversive drive. Therefore, the change agent, in compound with the supervisor, signals nothing new in the environment concerning evaluation.

If, however, when the change agent and the supervisor make a combined assessment of the worker and it is much more derogatory than that made by the employee's supervisor alone, then the conditioning of the aversive drive to the change agent would be predicted. This is because in learning an increase in the intensity of the drive when the two stimuli are presented in compound results in conditioning or "unblocking" (e.g., Kamin, 1968). Since a public appraisal was considered to be analogous to high drive intensity

and a private appraisal was considered to function analogously to low drive intensity, then if the change agent and the supervisor make a combined harsh appraisal in public and the supervisor's solo evaluation was always performed privately, conditioning of the aversive drive is predicted to develop to the change agent.⁹

If the variable differentiating the supervisor and the change agent was not their differential reinforcement history as when the supervisor was previously paired with the learned drive while the change agent had no such prior associations, but instead was the difference in the degree of "saliency" between the two, "overshadowing" would be the appropriate learning procedure rather than blocking (e.g., Kamin, 1969). The saliency of a conditioned stimulus need not be limited to its physical properties. Therefore, the power differential between the supervisor and a change agent might affect the conditioning of each. In learning, if two stimuli differ in saliency, the more intense conditioned stimulus will more readily become a source of learned drive because it, in essence, overshadows or overpowers the other stimulus. This occurs even though both stimuli, in compound, have been paired with the aversive drive (i.e., there are no differences in their reinforcement histories with the source of drive). For job redesign, if the supervisor had more direct power over the employee and was, in essence, analogous to being a more salient stimulus for the employee than the change agent, then the supervisor would be predicted to become a learned source of drive while the change agent

would not. Such results are predicted to occur even though both, together, have harshly evaluated the employee.

Blocking, unblocking, and overshadowing can also be analyzed for the situation in which the job redesign program itself is considered as a conditioned stimulus analog. If uncertainty is already prevalent when a job change program is introduced and this uncertainty does not increase or become more aversive for the employee, the program should not become a learned source of drive (i.e., blocking is predicted). If the program substantially increases the uncertainty in the work environment, then it would be predicted to become a learned source of drive (i.e., unblocking is predicted). If the program itself is a more salient conditioned stimulus analog than another stimulus that is concurrently introduced and associated with the uncertainty, it would be predicted to overshadow that stimulus. For example, a change agent may be a more salient stimulus than a job redesign program (perhaps because the consultant is a more discrete, observable stimulus and a social stimulus as well). In such a case, even though both the program and the change agent are associated with uncertainty, conflict, or evaluative observation, only the change agent will become a learned source of drive. Therefore, the change agent will be the object which induces social facilitation, he/she will be the one to whom escape and avoidance responses will be directed toward, and his/her presence will be punishing.

Conclusions

The present analysis of job redesign has tended to emphasize how negative effects could occur in job redesign situations. This type of analysis has been inspired by the recent findings that job redesign is not always successful (see, e.g., Hackman, 1975a, 1975b; Passmore, 1979; Rush, 1971). Passmore (1979) noted several "roadblocks" for efforts in work restructuring. He indicated that:

the knowledge that successful work restructuring is not always easy to achieve is spreading; and while we have begun to hear of efforts that have failed after their introduction, one must wonder how many efforts have been abandoned before they ever reached the experimental phase. . . . We suspect that the number of such aborted attempts greatly exceeds the number of glorified successes due to difficulties encountered early on in the process. (p. 319)

Many of the roadblocks Passmore specified have already been analyzed in learning theoretical terms or are amenable to such an analysis: For example, "pressures for uniformity"; "employee resistance due to lack of early involvement"; "pressure from competitors to maintain/improve productivity/quality"; "collective bargaining dynamics"; "unfavorable ratio of psychological costs to benefits for employees"--possibly analogous to a lack of positive rewards or the absence of counterconditioning; and "insufficient training for employees and supervisors for new roles". Similarly, many of the "barriers" to job redesign described by Rush are interpretable from a learning theoretical vantage point.

The failures of job redesign could be attributed to factors other than those elaborated on in this analysis. However, the

factors analyzed in this paper may be relevant to not only understanding the failures of job redesign and the process whereby they occurred (or could occur), but also to understanding how failures might be prevented. This could aid in precluding job enrichment, as a job redesign technique, from becoming "just another behavioral science fad" (Hackman, 1975a) and therefore discarded as a tool for improving the workplace. Hackman (1975b) cautioned that "work redesign as an organizational change strategy will find itself at death's door" (p. 99). The present analysis provides the kind of clear guidance needed to avoid these perils by making the prescriptions involved in implementing job redesign more explicit and understandable.

Along the road to understanding more about job redesign, the present analysis has generated a pattern of useful, quantitatively precise predictions that have not been generated by intuition but are logically derived from a common theoretical origin. The fruitful possibilities which these predictions bear for research in job redesign are plentiful. The knowledge about applying job redesign techniques in the workplace is not only increased, but the prospects for job redesign as a research area becoming much more scientific in the process are also great. Few researchers would question the pleasing nature of these goals.

Footnotes

1. A source of drive can be hypothesized to be present which would energize habit strength in this experiment. Subjects were aware that they were in an experiment and the object of observation. Spence & Spence (1966), for example, noted that "it could be argued that Ss perceive psychological experiments as being threatening" (p. 307). (See also Machol, 1975.)

2. For investigators interested in determining a gradient of generalization and therefore requiring the measurement of psychological similarity attributed to various stimuli, see Weiss (1963).

3. Although learned drives have been observed to be relatively resistant to extinction (e.g., Miller, 1951; Weiss, 1980), the drive conditioned to the change agent would be predicted to extinguish if he/she completely ceased in engaging in noxious evaluations of the worker. Therefore, when the change agent is used in subsequent learning paradigms, it will be assumed that his/her ability to function as a learned source of drive will not have been extinguished. Procedurally, this could occur not only through a reliance on the acquisition procedure described but also via a procedure known as reinstatement (Rescorla & Heth, 1975). In this procedure, the learned drive properties of the change agent could be reinstated by having the employee evaluated, although the change agent would not necessarily be directly connected with the evaluation.

4. Day and Hamblin (1964), for example, found in a laboratory experiment that aggressive responses were directed toward a supervisor with punitive and/or close supervisory styles. In addition, subjects had lowered productivity rates with these aversive styles of supervision in contrast to general, non-punitive supervisory styles. The authors interpreted their analysis via a frustration-aggression hypothesis (e.g., Miller, 1941); however, because the task employed by Day and Hamblin was described as novel and complex, the present analysis could ascribe the lowered productivity to "social facilitation" resulting from increased drive generated by close and/or punitive supervision.

5. Measures of response strength bear monotonic relationships to excitatory potential. For particular measures this may be linear or S-shaped. Consequently, a good approximation can be made to any ordinal variable.

6. It has been assumed here that participation is reinforcing. This is a widely held though often implicit belief in organizational behavior and organizational development (e.g., Greiner, 1967; Herzberg, 1974; Kahn, 1975; Marrow, 1975; Schuster, 1979). Experimental research which supports this assumption is available, however. For example, the opportunity to speak in reply has been shown to function as a reinforcer (e.g., Weiss, Boyer, Colwick, & Moran, 1971; Weiss, Lombardo, Warren, & Kelley, 1971). Also, it has been shown that an argument which supports an opinion can function as a reinforcer (e.g., Weiss, 1968), and that information

itself can be reinforcing (Weiss & Weiss, 1970). It can be argued that these and other reinforcing events can occur when participation is employed in the workplace (cf. Marrow, 1975). Participation gives the employee access to information, it allows the employee to express his/her opinion, and it can produce arguments (e.g., via the employee's peers) which support the employee's opinions.

7. Lawrence (1975) noted that the uncertainty associated with jobs has increased in the last fifty years. Lawrence stated that positive aspects of uncertainty result by allowing individuals to utilize more completely their problem-solving capacities (he noted that this capacity has also increased). The present conception of uncertainty, unlike Lawrence's, emphasizes how it can be aversive. Lawrence, himself, noted that his own research supported a view that such uncertainty is not always desired (Turner & Lawrence, 1965). The present analysis may alleviate such a discrepancy, although the recognition of some relevant individual differences is incorporated later into the theory.

8. Rush (1971) even noted that by employing the word "program" itself to describe a job redesign effort, implications of it being a "luxury" or a "fad" can become barriers to success at a later point. For example, if changes occur in the organization's environment, management will often resort to cancelling these luxuries. (See, e.g., Staats, 1975, for a learning theoretical analysis of the formation of attitudinal responses to verbal stimuli.)

9. One potential problem with this analysis resides in the change from the supervisor alone observing the employee to two individuals evaluating the employee (the supervisor and the change agent). If the change from one observer to two was a significant increase in drive intensity, then unblocking would be predicted, resulting in conditioning of the aversive drive to the change agent. To eliminate such a problem in this analysis, the supervisor could initially evaluate the employee with another person present (his/her assistant) and that person would subsequently be absent when the change agent evaluated the employee with the supervisor. In other words, the change agent is substituted at a later point in time for the assistant (cf. Cramer, Weiss, Balling, & Steigleder, 1981).

CHAPTER III

A LEARNING THEORETICAL ANALYSIS OF THE HAWTHORNE STUDIES¹

Introduction

The research conducted at the Hawthorne plant of the Western Electric Company has been treated by scholars in widely diverse manners. It has been condemned completely (Carey, 1967), criticized in part (Argyle, 1953; Sykes, 1965), defended (Landsberger, 1958; Shepard, 1971), and reinterpreted in various lights (e.g., Acker & Van Houten, 1974; Bell, 1947; Hare, 1967; Kahn, 1975; Lawler, 1975; Parsons, 1974; Pethia, 1979). Despite the numerous problems in research methodology and interpretation, the Hawthorne research is generally considered to be a classic study in management (e.g., Gass & Zimmer, 1975; Chase, 1945; Landsberger, 1958; Shepard, 1971).

The Hawthorne studies, particularly in the case of the Relay Assembly Test Room, can be examined or interpreted as a series of field studies. A controlled experiment was not achieved although this was the initial intention of the investigators (Carey, 1967; Roethlisberger & Dickson, 1939, see especially pp. 183-186; Whitehead, 1938). In spite of this limitation, however, the reports of the Relay Assembly Test Room and the other Hawthorne studies, provide an amazing amount of social observational "data".

Because the Relay Assembly Test Room was in essence a field situation, innumerable sources of both positive and negative reinforcement were undoubtedly present, just as they are in other natural situations (see, e.g., Dollard & Miller, 1950; Miller & Dollard, 1941). Most investigators have emphasized the former; for example, Parsons (1974) utilized an operant conditioning perspective and focused on the information concerning the operators' output and financial rewards received, noting that both functioned as positive reinforcers of behavior. Similarly, Lawler (1975) noted that wage incentives were tied to performance and thereby influenced behavior. Kahn (1975) examined the increased opportunity of the employees in the Relay Assembly Test Room for participation (cf. Schein, 1975). Participation also can be viewed as a reinforcer (refer to Chapter II, note 6).

There is also ample evidence of aversive motivators and reinforcers of behavior in the Relay Assembly Test Room. The present theory will attempt to redress the imbalance created by the emphasis thus far placed on positive reinforcers in the Hawthorne studies by focusing on the negative reinforcers that were existent.

Recently investigators have observed that the Hawthorne studies, particularly the Relay Assembly Test Room, have not evinced the role of positive incentives for the observed increased output; but, rather, when reinterpreted, there seems to be evidence for negative factors in the situation (Acker & Van Houten, 1974; Farris, 1969; Franke & Kaul, 1978). Thus far, however, learning

theory has not been employed as a theoretical tool to assist in analyzing what precisely would be the role of negative stimuli in the work environment in the Hawthorne studies, or to explain the various ways in which these negative factors might affect employee behavior. Learning theory is especially suitable for such a task; it has been employed to predict and explain behaviors motivated by a wide variety of socially interesting aversive sources of drive (e.g., behavior motivated by altruism: Weiss, Boyer, Lombardo, & Stich, 1973; Weiss, Buchanan, Altstatt, & Lombardo, 1971; competition: Steigleder, Weiss, Balling, Wenninger, & Lombardo, 1980; Steigleder, Weiss, Cramer, & Feinberg, 1978; conflict: Berlyne, 1965; Miller, 1944; Weiss, 1963; conformity: Seybert & Weiss, 1974; effectance: Byrne, 1971; Byrne & Clore, 1967; Lombardo, Libkuman, & Weiss, 1972; Weiss, Lombardo, Warren, & Kelley, 1971; evaluative observation: Cottrell, 1968; Lombardo & Catalano, 1975; Shea, Routh, Cottrell, & Brecht, 1973; Weiss & Miller, 1971; fear: Cecil, Weiss, & Feinberg, 1978; Miller, 1951). Since many socially interesting sources of aversive motivation have been made understandable in learning theoretical terms, their further extension to a classic series of studies in management might be highly beneficial in generating an understanding of this material guided by theory.

The Illustrious "Hawthorne Effect"

The "Hawthorne effect" is one of the more widely-known principles of the social sciences. Practically ever textbook

in organizational behavior refers to it in one form of another and researchers attempt to control or discount its infamous effects on their subjects (see, e.g., Cook, 1962, 1967; Machol, 1975; Somner, 1968; cf. Rubeck, 1975).

The definitions of the Hawthorne effect, while somewhat varied, all exhibit a similar theme. For example, Rush (1971) stated a definition which is typical of most descriptions of the Hawthorne effect: "What is popularly called the 'Hawthorne effect' denotes higher productivity among workers because they are being noticed" (p. 60). Similarly, Boettinger (1975) stated the following concerning the Hawthorne effect:

The mere observation of human beings, the showing of management concern, the process of experiment, and the interaction of the people with those conducting the experiment--all these themselves were a stimulus to progress (measured in production efficiency) which swamped the purity of classic hypothesis testing. (p. 264)

Cook (1967) indicated that the Hawthorne effect is:

said to be caused by the subject in the experiment realizing that he is a participant in an experiment and thus the object of special attention, whether real or imagined. Such awareness generally is said to have a positive facilitative effect on the subject's performance during the duration of the experimental situation. (p. 1)

This paper will subsequently show that the key word in the above statement by Cook may be "performance".

Social Facilitation and the Hawthorne Effect

Zajonc (1965) theoretically discriminated audience effects on learning from audience effects on performance in his exemplary

reconciliation of conflicting data in the fundamental social psychological research area, "social facilitation". The effects of observation facilitate performance of a well-learned task but have detrimental consequences for the learning of a novel task. By employing learning theory, Zajonc was able to make the effects of evaluative audiences on behavior a predictable process. Further elaborations and refinements of Zajonc's original theoretical proposal (e.g., Cottrell, 1968; Weiss & Miller, 1971) have led reviewers to conclude that learning theory is the most capable theory advanced so far in this pivotal field of research (Geen & Gange, 1977).

Learning theory has made social facilitation more understandable; it might similarly expedite an understanding of the Hawthorne effect-- as it was originally effected and how it might subsequently be induced. For example, most experiments attempting to test or control for Hawthorne effects have not made the crucial distinction between learning and performance and therefore have not examined the role of task complexity (e.g., Cook, 1967; Flohr, 1977; Haddad, Nation, & Williams, 1975; Hakel, Klimoski, & Wood, 1975; Morse & Reimer, 1956; Olson, 1968). Learning theory predicts, however, that the drive induced by evaluative observation (Cottrell, 1968) will energize all responses and that the benefits in responding will accrue to dominant habits. Errors are often the dominant response on a novel, complex task and are rampant when an evaluative audience observes the learning of such a task. Alternatively,

correct responses are generally dominant on a well-learned simple task and will be energized and emitted in the presence of evaluative others.

The Initial Illumination Experiments at Hawthorne

The original Hawthorne effect was discovered in a series of experiments at the Hawthorne plant of the Western Electric Company. These experiments were designed to assess the effects of illumination on productivity. In the first experiment, three departments were observed. The tasks involved were relay assembly, coil winding, and the inspection of small piece parts (Roethlisberger & Dickson, 1939).

The Hawthorne plant at the time of this study (1924) was typical of other industries in that many of its employees were engaged in repetitive work (Roethlisberger & Dickson, 1939; Whitehead, 1938). Whitehead elaborately described the task of assembling relays which was the activity in the study for which the Hawthorne studies are most widely known: the Relay Assembly Test Room. A detailed examination of this task in learning theoretical terms makes it possible to identify it as a task on which dominant responses were correct, particularly for the experienced worker. A similar statement could be made for the task of coil winding which was the task studied in the subsequent illumination experiment. The task, as described by Roethlisberger & Dickson was that of winding small induction coils on wooden spools. No specific description of the inspection

task was presented. Therefore, our examination of this initial experiment will focus on the tasks about which information is more abundant: relay assembly and coil winding.² Unfortunately, it is not known how many of the participants in this study were experienced workers.

It can be noted at this point that a major problem with these initial studies is that no formal technical report of them exists. However, one is still permitted to make certain assumptions of what did occur in these initial studies and draw conclusions based on these assumptions. Naturally, some conclusions will be more provisional than others, based on the description of the critical variables for a learning theoretical analysis.

If the workers involved in coil winding and relay assembling were of sufficient experience so that we can characterize them in learning theoretical terms as having dominant correct habits, then the observation by the experimenters would be predicted to have energized these correct habits and thereby facilitated performance. In these two departments such facilitation did occur. Output did increase "more or less continuously" without any direct relation to intensity of illumination (Snow, 1927).

A subsequent experiment (employing coil winders) varied illumination in a test group while attempting to keep illumination constant in a control group. Both groups were roughly matched on previous output and experience on the task. Again, if we assume that workers in both groups were of sufficient experience so that

their dominant responses were correct, then their knowledge of the experiment with the accompanying observation received is predicted to have resulted in an energization of their dominant correct habits. The results are in accord with this prediction: "This test resulted in very appreciable production increases in both groups and of almost identical magnitude" (Snow, 1927, p. 272).

A third experiment was conducted; the control group experienced a constant level of illumination, the test group worked under conditions of decreasing intensity. With the above stated assumption concerning dominant correct habits, it is predicted that performance will again have been facilitated in both groups. Such results were found until the lighting of the test group was of such extreme inadequacy that the workers complained that they could not see their work. At this point, production was no longer facilitated. Snow (1927), however, stated: "The operatives could and did maintain their efficiency to this point in spite of the discomfort and handicap of insufficient illumination" (p. 274).

The general conclusion of what caused this and subsequent Hawthorne effects has been previously described. Generally, it is thought that if a worker is subjected to considerable managerial attention, he or she will feel important and therefore content and productive. This is a typical and widely elaborated textbook conclusion, the validity of which has been questioned by several scholars (e.g., Acker & Van Houten, 1974; Carey, 1967; Kahn, 1975; Parsons, 1974). The present learning theoretical interpretation,

while similar in some respects in that it also investigates the "attention" received by these workers, is widely disparate on a crucial dimension. The attention received by these workers is not conceived by the present analysis as positive or appetitive in nature. Weiss and Miller (1971) clearly indicated that the drive induced by audience observation is aversive or noxious, as are other social learned drives (e.g., Brown, 1953; Brown & Farber, 1968; Weiss, 1980). The present theory also focuses on a key variable which in the illumination experiments was coincidentally favorable for the facilitation of performance: task complexity. If the task had instead been one which was highly difficult or if the workers had been inexperienced and their dominant responses had been incorrect, then errors would have been energized with a reduction in quality and a debilitation in responding predicted.

The First Relay Assembly Test Room

Research reports describe the task of assembling relays as repetitive (e.g., Cass & Zimmer, 1975; Chase, 1945; Gange & Fleishman, 1959; Pennock, 1930; Roethlisberger & Dickson, 1939; Whitehead, 1938). Whitehead specified the task and concluded that skill was a factor in that an unskilled or inexperienced "novice" would find relay assembly somewhat difficult. Whitehead further indicated that:

In order not to complicate a study of employee attitudes and motives with problems relating to the initial acquisition of skill, the original Relay Test Group were all chosen from among those with considerable experience in the assembly of this kind of relay. (p. 14)

They were termed by Whitehead as "experts". (The task for this particular group of operators was even modified by the word "habitual" by Whitehead [p. 14].)

Another factor introduced in the test room corroborates the assumption that the workers' task was one for which dominant responses were correct. The investigators attempted to reduce the number and frequency of changes in relay type which the operators had previously experienced in their regular department (e.g., Cass & Zimmer, 1975; Roethlisberger & Dickson, 1939; Whitehead, 1938). The effect of this may be assumed to have resulted in a greater simplification of the task, resulting in the correct habit being more dominant than if variability in relay type was more pronounced.

One worker, designated as Operator 5, was unlike the other operators in several respects. Her discrepancy will be shown to be significant for the present theory on several dimensions. Concerning the task itself, for Operator 5 two significant details are evident: (a) she was the least experienced operator (Roethlisberger & Dickson, 1939, Table 1, p. 23; Whitehead, 1938, Table 2, p. 16); and (b) she encountered the greatest number of changes in relay type (Roethlisberger & Dickson, 1939; Whitehead 1938 [see especially vol. 2, graph K-63]). Whitehead, for example, stated "Operator 5 . . . changed type so often as practically to never work for a whole day on any one type" (p. 71). The effect of these factors for Operator 5 will be assumed to have been that: (a) her task was

more complex than the other operators' (because of a greater number of relay changes); and (b) her correct habits for this task were less dominant in her habit hierarchy than those characterizing the other operators (due to her being less experienced and having a more complex task).³

Social Facilitation in the Relay Assembly Test Room

It would appear that within the Relay Assembly Test Room a task was present that was ripe for facilitation effects on performance (with the exception of Operator 5's task). The question remains, however, whether the workers perceived an evaluative audience. If they did, then the requirements for social facilitation have been fulfilled:

- (a) a simple task in which dominant responses are correct; and
- (b) an evaluative audience which energized those dominant responses.

The evaluation in a social facilitation paradigm need not be explicit. Implicit or anticipated observation can arouse the socially learned drive (e.g., Henchy & Glass, 1968). In addition, a neutral cue may be classically conditioned to the aversive drive and therefore serve as a "symbolic audience" (Weiss & Miller, 1971). A classically conditioned symbolic audience or an anticipated audience affects responding in a social facilitation paradigm. Therefore, the Relay Assembly Test Room appears to conform to the requirements of a social facilitation paradigm. The workers in the Relay Assembly Test Room were aware that their performance was being continuously monitored, thus the implied presence of

evaluative others was present. All levels of the organization were interested in the findings of the test room and the operators were undoubtedly aware of this. Furthermore, Homans (1972) stated that "they knew that the eyes of the company were upon them" (p. 247) implying that the concept of a symbolic audience was also operative for the workers in this study.

There were also several instances in which there is good reason to assume that the operators were confronted with an explicit audience. The descriptions of the events in the Relay Assembly Test Room by Roethlisberger & Dickson (1939) and Whitehead (1938) offer many elaborations of evaluative audiences for the workers. For example, a description by Roethlisberger and Dickson of the test room is one which emphasized the existence of multiple observers:

It would be incorrect, then to think of the Relay Assembly Test Room as a small room in which there were only five girls, the layout operator, and occasionally, an inspector. By Period XIII there was the newly created department chief (the original test room observer), who spent a good share of his time in the room. And further below him was the junior clerk and office boy, a young Italian boy in his late teens. At a later date, a young woman also was added to the group. Her duties were mainly related to statistical studies, but she in fact also contributed her observations about what was going on. Besides these daily contacts, a number of other people visited the room. In the beginning, the then superintendent of the Inspection Branch, who was extremely interested in the experiment, was a frequent visitor. There was an intermittent stream of other visitors or consultants: industrialists, industrial relations experts, industrial psychologists, and university professors. (p. 180)

This description certainly makes the point crystal clear that

evaluative observation did occur in the Relay Assembly Test Room. It should be emphasized that, unlike Roethlisberger and Dickson (1939), the present theory does not view this observation as a positive incentive but as an aversive source of drive which energized habit strength and facilitated performance. The fact that multiple observers were present is predicted to have further heightened this drive since the learning process of summation of the drive induced by evaluative observation occurs when multiple observers are present (see, e.g., Weiss & Miller, 1971). In addition, the presence of expert observers, as described by Roethlisberger and Dickson is also predicted to have heightened this drive (see, e.g., Cottrell, 1972; Lombardo & Catalano, 1975).

Thus, the evidence for the presence of a source of drive via evaluative observation is available. The energization of performance is the classic result attributed to this study--historically described as a continuously increasing rate of output (e.g., Argyle, 1953; Homans, 1973; Landsberger, 1953; Pennock, 1930; Roethlisberger & Dickson, 1939; cf. Pethia, 1979).⁴ Not only does learning theory predict these illustrious results, but in addition some auxillary results reported by Roethlisberger and Dickson (1939) are amenable to analysis as well. Specifically, Operator 5, in addition to exhibiting less facilitation of performance than the other workers throughout the study, generally made more errors than the group average (Roethlisberger & Dickson, 1939, Table V, p. 80). Quality was measured by repair time--

the average number of minutes per week taken to repair parts that were defective, some of which should have been discovered by the operator. This distinction in Operator 5's errors was more pronounced early in the study when she suffered more relay type changes than the rest of the group (see Whitehead, 1938, vol. 2, graph K-63). These results are predictable from learning theory since errors, the dominant response on a complex task, are energized when a source of drive is present. Numerous experiments have successfully tested this prediction in a social facilitation paradigm (e.g., Cottrell, 1968; Cottrell, Rittle, & Wack, 1968; Sasfy & Okun, 1975).

Classical Conditioning

In addition to the general presence of observers in the test room, evidence supports the assumption that specific individuals were associated with evaluative observation. If an individual, as a conditioned stimulus analog (see, e.g., Lott & Lott, 1968, 1972), is repeatedly associated with an aversive source of drive, then that individual will be predicted to become a conditioned source of drive (Weiss & Miller, 1971; Weiss, 1980). The effects of such conditioning do not merely concern the previously mentioned social facilitation paradigm (in which the presence of the person conditioned to aversive evaluation would energize dominant responses), but also involve two other effects attributed to drive: (a) the sudden onset of drive is punishing; and (b) its prompt reduction is reinforcing (e.g., Brown, 1953; Logan, 1959; Lombardo, Libkuman, & Weiss, 1972; Dollard & Miller, 1950; Spence, 1956). It can therefore be predicted

that if an individual was associated with aversive observation in the Relay Assembly Test Room, then: (a) certain behaviors emitted in the presence of that person would have been punished (e.g., talking might have been suppressed); and (b) a behavior which allowed the operators to escape or avoid that person would have been reinforced, and therefore strengthened.

The Test Room Observer. The test room observer was stationed as a full-time occupant of the test room. He kept complete records of what occurred in the test room and took notes of the operators' conversations. Whitehead (1938) presented evidence which indicated that the operators disliked this practice.

There are some instances in which the test room observer was described as being evaluative, punitive, or threatening. For example, Roethlisberger & Dickson (1939) reported that the test room observer "asked them [the operators] why they did not try to increase the percentage by 10 per cent" (p. 42). This statement perhaps reflected a subtle pressure which would be in accord with a view that the observation by the test room observer was not as neutral or positive as Roethlisberger & Dickson seemed to have concluded. Similarly, Roethlisberger & Dickson reported that "the observer called the attention of Operator 3 to the fact that her output was low yesterday" (p. 46). He also was noted as threatening the girls with a prolonged period of elimination of the favored rest pauses in an effort to curb talking.

Generally, however, descriptions of the test room observer

indicated that the operators came to regard him as a non-threatening observer, particularly when he is compared to some of the other observers (e.g., the foreman). The process whereby this individual would lose his initial ability to facilitate the performance of the operators would be predicted by learning theory to occur with the passage of time, perhaps either through counterconditioning or extinction. In counterconditioning, a stimulus which has been conditioned as an aversive excitor is subsequently paired with an appetitive stimulus. In extinction, the stimulus which has been associated with an aversive stimulus no longer receives such associations but is instead presented by itself. Since the operators often discussed their fears and anxieties with the test room observer and he attempted to reassure them, it can be hypothesized that some counterconditioning did occur. In addition, the test room observer attempted to and was successful in securing privileges for the operators which could further have transformed the associations the operators had of him to positive ones (e.g., he was attributed as being responsible for their receiving pay for time not worked as part of the experimental conditions in Period 11).

The Foreman. Unlike the test room observer, the foreman was and seemed to remain more firmly entrenched as a conditioned aversive stimulus. If the foreman, indeed, functioned as a conditioned aversive stimulus for the test room operators, it would be predicted that he was capable of energizing dominant responding on their task, punish other behaviors by his presence,

and escape or avoidance responses would be directed toward him.

There are several instances cited by the various reports of the Relay Assembly Test Room which support the previous assumption that the foreman was connected with evaluative observation as well as other aversive motives. For example, on several occasions the foreman disciplined, reprimanded, and threatened the operators. A quote from the daily history record of June 21, 1927 subtly illustrates the role of the foreman as an evaluative observer: "The foreman informed the group of their low activity for the past week" (Roethlisberger & Dickson, 1939, p. 37). Roethlisberger and Dickson indicated that the role of the foreman in the regular department had been that of disciplinarian. That he continued in this role is not surprising and several instances of this behavior are described.⁵ However, given the flavor of the reports of the various Hawthorne studies in which the "human relations" approach is introduced, it is somewhat surprising that evidence supporting the presence of negative reinforcers is available at all. (The observations were admittedly influenced by the bias of the investigators and the observers, Whitehead, 1938.)

The fact that the foreman remained responsible for rate revision, promotions, and similar activities (Roethlisberger & Dickson, 1939), supports an assumption that he possessed a high degree of "punitive power" (Weiss & Miller, 1971) over the operators and thus could effectively function as a learned source of drive. The particular aversive drive which was conditioned to the foreman

may have been a combination of evaluative observation and fear itself. The evidence for learned drives is that they are all based on some form of noxious drive, fear being one such source (e.g., Brown, 1953; Cravens & Renner, 1970; Mineka, 1975; Weiss & Miller, 1971; Weiss, 1980). The evidence for fear as a learned drive in this study, when it was not connected with aversive observation, will subsequently be presented.

Operator 2. The introduction of Operator 2 in the test room at the commencement of Period 8 is observed by several reports of this study as being a noteworthy event. Operator 2 was described by Roethlisberger and Dickson (1939) and Whitehead (1938) as "ambitious". There is evidence presented by these sources that for the other operators she was associated with evaluative observation. There is also some suggestion that her introduction into the test room and subsequent taking of the role of evaluator resulted in the foreman no longer finding it as necessary to perform the role of evaluative observer himself (Roethlisberger & Dickson, 1939; Whitehead, 1938).

The following are some illustrations supporting the assumption that Operator 2 was associated with evaluative observation:

"Op. 2 criticized Op. 4 for not doing more" (Whitehead, 1938, p. 123); "Op. 2 was admonishing Ops. 3 and 4 for not working hard enough" (Roethlisberger & Dickson, 1939, p. 63; Whitehead, 1938, p. 123); "Operator 2 . . . began to urge the other girls to increase their pace" (Roethlisberger & Dickson, 1939, p. 63);

"Operator 2 again asserted herself by ordering the other girls to refrain from talking" (Roethlisberger & Dickson, 1939, p. 63); "Operator 2 quite frequently admonished one of the slower girls. Especially in the early part of the period [Period 13] she exerted pressure on Operator 3, with the result that these two girls did not talk to each other for several days" (Roethlisberger & Dickson, 1939, p. 74);⁶ "Op. 2 had the definite purpose of increasing output and, being the dominating member of the group, she impressed this purpose on the others" (Whitehead, 1938, p. 132).

Taken as a whole, the evidence seems to conclusively support the assumption that Operator 2 was associated with evaluative observation. There is also evidence presented by Roethlisberger and Dickson (1938) and Whitehead (1938) to indicate the aversive aspects of this role of Operator 2's. She was described as being resented by the other workers and she was subjected to antagonistic remarks. For example, "Op. 4 remarked to Op. 2, 'Oh shut up ambitious'" (Whitehead, 1938, p. 123). Whitehead further noted that Operator 2 "was occasionally referred to as 'ambitious'. This epithet was always used with a note of irritation" (p. 123).

Since the evidence seems to conclusively support the assumption that Operator 2 became a conditioned source of drive, it is predicted that she would have energized the responses of the operators on their task. Operator 2's introduction in Period 8 did effect a significant incline in the hourly output of the group (Franke & Kaul, 1978). The statistical confirmation of this effect by Franke & Kaul

will be discussed shortly.

The Influence of Fear
in the Relay Assembly Test Room

Allusions have already been made to the role of fear or anxiety in the test room. Fear itself has been given a potential role in social facilitation as the source of drive associated with the presence of others observing a person perform a task (Weiss & Miller, 1971). There are, however, some instances in the Relay Assembly Test Room which more accurately would be attributed to fear as an aversive drive without the influence of evaluative observation. These will now be specified. The effects of fear on the behavior of the operators would be the same as those associated with other noxious drives.

The previously noted threats, disciplinary actions, and reprimands the operators received from the foreman and other sources may more appropriately be attributed directly to fear or anxiety. One particular instance is notable in this regard; Operators 1a and 2a were dismissed from the test room and replaced at the end of Period 7 due to "lack of cooperation" and "hostility" (Cass & Zimmer, 1975; Roethlisberger & Dickson, 1939; Whitehead, 1938). As previously noted, a significant rise in productivity in Period 8 ensued. Since, as previously noted, this period also concomitantly involved the introduction of Operator 2, a hypothesized learned source

of evaluative observation, we can postulate that two related sources of drive occurred at this time to effect the energization of performance which was demonstrated to have occurred by Franke and Kaul (1978). In their pioneering statistical analysis of the data from some of the Hawthorne studies, Franke and Kaul found that these factors, the introduction of Operator 2 and the firing of Operators 1a and 2a, were significant in explaining much of the variance in the group's hourly output data (79%) as well as weekly output data (56%). They termed the changes occurring at this time (beginning of Period 8) "managerial discipline", and found it to be the major explanatory variable in accounting for variance in both hourly and weekly output of the group. While the title "managerial discipline" is somewhat misleading for the present analysis since Operator 2 also was simultaneously introduced, their findings are perfectly in accord with and predicted by the present theory.

The influence of the industrial depression would also appear to be assigned a role connected with fear as a drive. The threat of being laid off and out of work occasioned by the depression can be assumed to have caused considerable anxiety. Evidence presented by Whitehead (1938) supports this contention. For example, Whitehead noted that "the last two years of the log are filled with preoccupations with respect to reduced weekly hours and 'lay offs'" (p. 164). Whitehead further reported that the operators were extremely "anxious about their futures" (p. 183). The operators were in fact

eventually laid off, one by one, beginning with Operator 5 and concluding with Operator 2.

The depression began during Period 15. During Period 16, Whitehead (1938) indicated that "the operators knew that their association with the company was drawing to its close" (p. 214). Since drive energizes habit strength in learning, the fear introduced at this time is predicted to have energized the workers' performance. Output did in fact significantly increase with this additional source of drive (Franke & Kaul, 1978). Franke and Kaul found in their statistical analyses of the group hourly and weekly output data that the economic depression was a significant explanatory factor (accounting for 14% of the variance for hourly data and 8% for weekly data).

The Influence of Conformity in the Relay Assembly Test Room

Some examples of the behavior of Operator 2 have been previously described. As was noted, this worker attempted to induce the other operators to produce at a high rate. The workers in the Relay Assembly Test Room did appear to adhere to this norm of high productivity which was largely set by Operator 2 and, eventually, they came to enforce this themselves on any deviants.

Seybert and Weiss (1974) have experimentally shown that nonconformity can function as a negative reinforcer of behavior.

If it can be assumed that when an operator in the Relay Assembly Test Room was low in her productivity, she experienced some type of aversive consequence (e.g., criticism) from Operator 2 or some other group member, then it is predicted that the operator to whom the criticism was directed would have attempted to escape from the criticism. One way to do so could have been by increasing her productivity. Some of the evidence supporting the above assumption has been previously delineated. An exceedingly manifest example of such behavior is the following quote from the log of a statement made by Operator 2 who was stated as being "provoked by the output rate curves showing Ops. 3, 4, and 5 on a downward trend": "Oh! What's the matter with those girls. I'll kill them" (Whitehead, 1938, p. 127).

It might furthermore be predicted that an operator could effectively avoid Operator 2's caustic criticism by performing at a high rate of speed. Therefore, the learning paradigm of avoidance may also be employed in examining the operators' behavior. In this case, conforming to the group's norm of high productivity avoided the group's, and particularly Operator 2's, wrath. In addition, if criticism or some other aversive consequence followed a bout of low productivity, then punishment may have played a role in suppressing such nonconformist behavior--i.e., suppressed the low productivity.

Prior to this section, the focus of the explanation of

the results in the Relay Assembly Test Room has been on one property of drive--that it energizes habit strength. We have just seen, however, that learning theory has much more breadth and flexibility than this; instrumental escape, punishment, and avoidance paradigms can also be employed. The result of this flexibility and breadth is that we can bring the order of scientific theory to the socially rich observations that have been described in the various reports of these studies.

Competition as a Factor

in the Relay Assembly Test Room

The reports of the Relay Assembly Test Room cited evidence supporting an assumption that the operators occasionally competed with each other and with themselves (trying to beat former performances). Competition has been shown to function as an aversive drive (Steigleder et al., 1980; Steigleder et al., 1978). Therefore, if competition did occur in the Relay Assembly Test Room, an additional source of drive can be postulated to have had its effects in this situation.

The evidence supporting competitive factors in the Relay Assembly Test Room is illustrated by the following quotations: "Toward the end of 1929, Op. 4's rate of work had increased so much as to rival that of Op. 2; and the supervisor entertained the idea that Op. 4 was supplanting the other operator as the star exhibit of the Test Room" [emphasis added] (Whitehead, 1938,

p. 143); Operator 3 stated, when questioned about her output, "I'm almost up to Operator 4 and I have a bigger relay" (Roethlisberger & Dickson, 1939, p. 37); "Operator 2 said: 'We have to make a high percentage today to make up for yesterday,'⁷ to which Operator 3 replied, 'I'm going to make more than you today'" (Roethlisberger & Dickson, 1939, p. 63); "Frequent attempts were made by certain operators to break the record for a day's work" (Roethlisberger & Dickson, 1939, p. 73).

As can be seen, there is ample evidence to support an assumption that competition did occur in the test room. However, Whitehead (1938) and Roethlisberger and Dickson (1939) attempted to deny its presence. This is in line with the historical emphasis on positive factors which they supposed were responsible for the illustrious results of increased productivity. As previously stated, such interpretations of the Relay Assembly Test Room results which are based on positive influences have been seriously challenged (Acker & Van Houten, 1974; Farris, 1969; Franke & Kaul, 1978).

The presence of competition appears to be supported by the reports of the events of the test room, some examples of which are delineated above. If competition was present in the Relay Assembly Test Room as the evidence seems to indicate, then its effects would be congruent with the effects of other sources of aversive drive (specified previously). Thus, for example, another factor inducing the facilitation of performance is implicated in

the present analysis of this classic study.

The Second Relay Assembly Group

A second relay assembly study was planned as the Relay Assembly Test Room study evolved. This study was much more abbreviated in length and in the factors involved (both intended and unintended) than the Relay Assembly Test Room. The original aim in designing the second relay assembly study was to examine the influence of the small group pay incentive and the resulting increased productivity which occurred in this study is generally attributed to this factor. Learning theory certainly would not discount the influence of a wage incentive on performance when a direct contingency is involved (see, e.g., Parsons, 1974). However, as has amply been demonstrated thus far, the flexibility and breadth afforded by a thorough extension of learning theory permits the explanation of socially interesting factors found in situations such as the Hawthorne studies.

The second relay assembly test occurred in the main relay assembly department. (Testing commenced November 16, 1928 and terminated March 14, 1929.) A baseline of output was measured (August 27 to September 29, 1929) during which time the operators (five "experienced" operators) involved in the study did not appear to have been aware that their performance was being observed (see Roethlisberger & Dickson, 1939, p. 130, fn. 1). The operators in the study were "moved to adjacent positions" and were paid in proportion to the performance of their group (Roethlisberger &

Dickson, 1939). As of January 26, 1929, the operators' payment reverted to the standard department-wide method. The measurement necessarily concluded when the subjects were transferred.

Support for the more favorable wage incentive was found. Production increased (12.6%) when the workers were moved and changed to the small group incentive (significantly, Franke & Kaul, 1978, fn. 9) and decreased when they were reverted to the department-wide method of payment. Social facilitation, however, may have played some role in the results; the operators were aware that they were involved in an experiment during the time that they received the preferred incentive. Whether they were aware of the continued monitoring of their performance when they reverted to the old method of payment is not discernable from the report of this study (Roethlisberger & Dickson, 1939). However, the information presented concerning output during this period could have been taken from departmental records without the operators' knowledge (thus eliminating evaluative observation as a source of drive for this period), just as it seems to have been for the baseline period. If this did occur, the present theory would predict a decline in performance during this period, since the source of drive was, therefore, no longer present.⁸

Evidence exists for another source of drive in this study, namely, competition. The operators in the Second Relay Assembly Group were reported to be competing with the Relay Assembly Test Room (Roethlisberger & Dickson, 1939, pp. 134, 158).⁹ The influence

of competition could also have been restricted to the time of the preferred incentive system, if the operators were knowledgeable only at this time of the study.

In conclusion, some evidence for three factors inciting improvements in performance for this group exists: (a) the wage incentive, (b) evaluative observation, and (c) competition. All are amenable to a learning theoretical analysis--the wage incentive as a positive incentive, competition and evaluative observation as learned, aversive sources of drive. While these factors all appear to have been simultaneously involved in this study, learning theory can explain the effects of each factor individually and their combined presence: Given the nature of the task, all would have worked to facilitate output.¹⁰

The Bank Wiring Observation Room

While facilitative effects on performance were demonstrated in the Hawthorne studies that have been discussed above, such results were not obtained in the Bank Wiring Observation Room (Roethlisberger & Dickson, 1939). In the Bank Wiring Observation Room, exceedingly strong pressures for conforming to output norms were observed. The norm of wiring two equipments per day had developed and workers consistently followed this norm (Roethlisberger & Dickson, 1939; Homans, 1972; Landsberger, 1958).

As previously noted, Seybert and Weiss (1974) empirically demonstrated that nonconformity functions as a negative reinforcer of behavior. These investigators have subsumed and interpreted

this socially interesting research area via learning theory. The experimental knowledge gained by Seybert and Weiss in a carefully controlled laboratory situation can be extended to the observations reported in the Bank Wiring Observation Room.

The pressures for conformity were extremely forceful in the Bank Wiring Observation Room. They included physical and verbal harrassment for both over- and under-producing. It is not surprising, therefore, that a straight-line output was reported. Escape conditioning, avoidance conditioning, and punishment paradigms are all useful in assisting in an explanation of the behavior of actual restriction of output which occurred and of the employee fabrication of reported output (Roethlisberger & Dickson, 1939). Both enabled the employee to avoid physical and verbal abuse of co-workers. The abuse was used to suppress nonconformist behavior, and an employee who was working too rapidly could escape the physical or verbal abuse from his peers by slowing down.

The present theory can also explain the reasons behind the development of these norms. Roethlisberger and Dickson (1939) reported that this habit of restricting output was not based on a logical assessment of the situation, in that rate cutting had never occurred for these employees (cf. Sykes, 1965). However, Roethlisberger and Dickson, did report that the workers expressed fears or anxieties of what would transpire if they produced at a

higher rate. Even though these fears or anxieties might have been vague, the fact that they existed is important. Conformity or restricting output for these workers can be explained as an instrumental response which functioned for them in avoiding a fearful situation (e.g., layoffs, higher quotas, etc.). Dollard and Miller (1950) have indicated that the contingencies of a situation can be anticipated and affect behavior; they need not be expressly encountered in order to function as contingencies. For example, the worker could verbalize or think of the fearful situation (e.g., being laid off) which could then function to increase the motivational construct, drive. This drive could be occasioned by a cue such as the thought, "I'm performing at a higher rate than I should." The workers could then make escape responses in an attempt to reduce or terminate the drive associated with such aversive thoughts. These escape responses can take several specific forms: the development of a norm, the punishment of nonconformists, the restriction of one's own output, the misrepresentation of output actually produced, etc. The reinforcement for these behaviors would be a temporary reduction in the fear or anxiety associated with the thought of over-producing (e.g., being laid off). Since the Bank Wiring Room study occurred during the depression when layoffs were commonplace, further support for the assumption that fears or anxieties did persist is prevalent. (Sykes, 1956, also presented evidence supporting the view that such fears were commonplace for the workers at the time of this study.)

Observation in the Bank Wiring Room

The contrast between the observation which occurred in the Bank Wiring Observation Room and in the Relay Assembly Test Room was emphasized by Roethlisberger and Dickson (1939). For example, they noted:

In order to control the factor of attention from outsiders or people of high rank, it was decided that such people should not be allowed to enter the room during working hours unless it was necessary. (p. 398)

Furthermore, it was decided that "no records were to be taken which might tend to make the workers apprehensive or too consciously aware that they were being studied" (p. 388). It was also decreed that the observer "should not give orders or answer any questions which necessitated the assumption of authority" (p. 388). And particularly relevant was the guideline for the observer that "he must above all refrain from evaluational judgements" (p. 390).

The way the men in the Bank Wiring Observation Room at first responded to the observer and how this changed is compatible with a hypothesis that the presence of the observer was originally aversive and then became neutralized and possibly eventually positive (via extinction and counterconditioning respectively).

During the first few days the men were in the observation room, they behaved quite differently from the way they behaved in the department. There was much less talking and they worked steadily until quitting time. The observer was apparently regarded with distrust. . . .

. . . The observer felt the attitude toward him was similar to their attitude toward the foreman. Whenever the foreman entered the room, the men became absolutely quiet and cast furtive glances at him as

he moved about. . . . The observer noticed that when he himself left the room the volume of conversation increased and that as soon as he came back the men all became quiet just as they did when the foreman came in.

Toward the middle of the week the tension lessened. The men began to talk more loudly and occasionally someone would laugh. Any unusually loud noise, however, whether it was a laugh, a whistle, or the dropping of a spool of wire or solder, seemed to cause embarrassment to the person responsible and several of the others would glance over their shoulders toward the observer. With each unusual occurrence they apparently expected something to happen. By Friday the group had become less timorous. . . .

. . . By the end of the third week the observer was on fairly good terms with everyone in the group and he was being included in conversations which would be considerably altered at the approach of a supervisor. This was taken as a sure sign that he gained their confidence. (Roethlisberger & Dickson, 1939, pp. 398-400)

The preceding quotation is highly supportive of a learning theoretical analysis. The observer was originally aversive; however, he subsequently lost his ability to function as a source of aversive drive (via extinction). If the observer was originally aversive for the workers--as the drive theory of social facilitation would predict to occur when a stranger observes workers in this type of situation--it is expected that the observer would facilitate performance (e.g., "they worked steadily until quitting time"), suppress behavior (e.g., talking), and be escaped and/or avoided if the situation allowed it. Given that directives for the observer were such as to make him unobtrusive and non-aversive (e.g., "refrain from evaluational judgments"), it is predicted that extinction would occur. The

result being that the observer would lose his capacity to facilitate performance, to suppress behavior, and escape or avoidance responses would no longer be appropriate or necessary. The results of the Bank Wiring Observation Room are compatible with this analysis.

Conclusions

The previous analyses of the various studies in the Hawthorne plant of the Western Electric Company examine the findings of these classic studies from a learning theoretical framework.¹¹ Several unique explanations are offered for many of the results found in these studies. Learning theory was shown to be capable of yielding interpretations not only of the illustrious result of increased output (the "Hawthorne effect"), but to theoretically predict when such a result should occur and when it should not.

Carey (1967) has described a number of weaknesses in the experimental methodology of the Hawthorne researches, particularly in the Relay Assembly Test Room. By utilizing the Hawthorne research as a source of observational rather than experimental data, one can enjoy much of the social richness available in the accounts of these detailed, lengthy investigations. However, this social wealth is often obtained at the cost of not being able to delineate exact and precise relationships. Therefore, numerous explanations are plausible for the various studies. The present analysis is not offered as the only worthy explanation of the various Hawthorne studies. Parsons' (1974, 1978) explanation, for example, appears capable

of handling many of the results in the Relay Assembly Test Room (cf. Franke & Kaul, 1978, fn. 13) as well as many of the results of the other studies. The present analysis, also based on learning theory, although employing paradigms other than operant conditioning, can interpret many results--some of which have been noted as anomalies.

Parsons (1974), in regard to the traditional explanation of the Hawthorne effect--"that the relay assemblers kept increasing their production simply because they knew they were in an experiment"--put forth the question: "But just what is such awareness and how can it bring about such a profound effect?" (p. 930). The present learning theoretical analysis explicitly addresses this question and many others that are pertinent to the various studies undertaken in this classic research.

Footnotes

1. The organization of this chapter is in accord with the customary treatment of the group of studies undertaken at the Hawthorne plant of the Western Electric Company. Roethlisberger and Dickson (1939) presented the studies in historical fashion and although they did compare and contrast events in the separate studies, they were considered to be separate, occurring at different time periods and in different locations of the plant. When a theoretical analysis permits the inclusion of more than one of these studies, as the present theory does, the analysis is typically organized by study (see, e.g., Parsons, 1974).

2. The task of inspecting small piece parts would appear to be more complex than coil winding and relay assembling. The results in this department were highly variable. Output "bobbed up and down" according to Snow (1924). In their report of the Bank Wiring Observation Room, Roethlisberger and Dickson (1939) more fully described the task of inspection in general at Hawthorne. This description is compatible with a view that would ascribe greater complexity to an inspector's task. The fact that inspectors at Hawthorne were accorded a relatively high informal social status is also congruent with such a view, since task demands and status appeared to be somewhat correlated in the plant (see Roethlisberger & Dickson, 1939).

3. Roethlisberger and Dickson (1939) also reported that Operator 5 was less dexterous and intelligent than the other operators (as measured by a series of tests). This could have combined with the other factors unique to her situation to make the task for her more complex than that for the other operators. It would furthermore be assumed that as the experiment in the Relay Assembly Test Room progressed, Operator 5's relative inexperience would become a factor of diminishing relevance. She was gaining substantial experience in assembling relays in the test room. Parsons (1974) noted that one must acknowledge that the operators were becoming more skillful and that this contributed to the increased output observed. For Operator 5 this increased skill and the reduction in change in relay type late in the experiment (see Whitehead, 1939, vol. 2, graph K-63) could be assumed to make her situation less dissimilar from the other workers at this later interval.

4. Pethia (1979) included a 24th period, as described by Whitehead (1938). Franke and Kaul (1978) did not include this period in their statistical analyses indicating that "during this final period, all five operators were laid off and replaced by more senior workers who were inexperienced in the assembly of relays" (fn. 6, p. 627). The present theory would also exclude this period from analysis based on theoretical reasons in that differences between "novices" and "experts" (Whitehead's terminology) are predicted.

5. The foreman's previous association with aversive events for the operators may have resulted in the blocking of any significant aversive associations for the test room observer, since he was a stranger for the operators. In blocking, a highly conditioned cue can block the formation of conditioning to a novel cue when the two cues (in this case, the foreman and the test room observer) are presented in compound (see, e.g., Rescorla & Wagner, 1972).

6. The data for Operator 3 in Period 13 jumps to 64.3 units per hour from 59.7 units per hour (Franke & Kaul, 1978, Appendix 2).

7. Operator 2 seems to have been something of a Stakhanovite (see, e.g., Granick, 1954). It is difficult to imagine that the unpleasant, aversive characteristics of Operator 2 would not have been more readily recognized had this been a study of an "emulation campaign" in a Soviet factory.

8. Although no observer was present to measure performance in this study, the mere knowledge of a test situation has been associated with inducing drive in a social facilitation paradigm (see Weiss & Miller, 1971). Refer also to the previous material on the classical conditioning of symbolic audiences.

9. Competition may also have been induced in the Relay Assembly Test Room when the Second Relay Assembly Group commenced and allusions were made concerning rivalry (see Roethlisberger & Dickson, 1939, p. 134). The second study occurred during Period 13 in the first study. A rise in performance did occur at this time (see Franke & Kaul, 1978, Appendix 1).

10. The number of changes in relay type were more substantial for the Second Relay Assembly Group than there were in the Relay Assembly Test Room. This was particularly acute for Operator R₃ during the period when all were returned to the department-wide method of payment. Her performance drops considerably at this time, when "she was required to assemble from 50 to 60 different types of relays daily" (Roethlisberger & Dickson, 1939, p. 132). (The average number of changes in the regular department was 15.)

11. One of the studies, the Mica Splitting Test Room, is not covered in the present analysis. This study involved a task requiring a high degree of skill according to Roethlisberger and Dickson (1939) and may have been "complex" even though the workers were experienced. The data in this study seemed to indicate that rest pauses resulted in favorable increases in output (Franke & Kaul, 1978, fn. 9), as might be expected with a task requiring a high degree of skill. In addition, the threats and fears associated with the depression induced a decline in productivity rate in these subjects. Learning theory would predict such a decline if the task was complex and dominant habits were not those of high or rapid rates of performance (Drive interacts with habit to yield excitatory potential).

CHAPTER IV

A LEARNING THEORETICAL ANALYSIS OF ATTITUDE FORMATION AND CHANGE TOWARD LABOR UNIONS

Introduction

In recent years, the ability of public sector employees to unionize and collectively bargain has been significantly deterred (Colton, 1978; Kruger & Rodgers, 1978). Unlike the period of the 1960's when federal, state, and local legislation created an upsurge in public sector unionization (Hallem, Walther, Brill, Lebow, & Wade, 1972), recent legislation has not been auspicious for the public sector employee (e.g., California's Proposition 13). In an interview of approximately 50 representatives of labor and government, Ledbetter (1976) indicated that "leaders of many municipal unions around the country are worried that public employees are losing public support and bargaining powers only recently secured" (p. 1). Ledbetter further reported that "almost all of those interviewed agreed that public employees . . . were going to face tough negotiations and an unsympathetic public for at least the next few years" (p. B6).

Public opinion toward labor unions and their leaders has also become embittered (e.g., "Approval of Labor Unions Sinks," 1979;

"President Johnson and the Public", 1969; "Survey Finds", 1978).

Kruger and Rodgers (1978), for example, noted that:

Due largely to the public criticism directed at public unions, the AFL-CIO leadership became concerned that it was losing clout among congressional allies because of the AFSCME-AFL-CIO affiliation. AFSCME eventually withdrew its AFL-CIO membership. (p. 270)

Negative attitudes toward governmental employees can be particularly detrimental since the public can put their attitudes into action and affect the employee economically (Wollett, 1964). This is notably acute for public employees at the local level (Torrence, 1979). To date, no theory has been employed to explain or predict the formation or change of the sentiments regarding public sector unions. A theory which explains not only how negative attitudes are formed but also predicts how they might be changed would be a useful aid in understanding the available literature, guiding new research, and also in practical applications (e.g., so that unions are no longer confronted with an unrelenting public).

Attitude formation and change has been a pivotal research area in social psychology. Numerous theories have been developed to predict and explain the research in this field (e.g., Cognitive Dissonance Theory: e.g., Festinger, 1957; Wicklund & Brehm, 1976; Balance Theories: e.g., Heider, 1958; Osgood & Tannenbaum, 1955; Learning Theory: e.g., Lott & Lott, 1968, 1972; McGuire, 1957; Razran, 1938; Staats, 1975; Weiss, 1962, 1968).

The intent of the present analysis is to utilize learning theory as a model to predict and explain the formation and change of attitudes toward labor unions, emphasizing attitudes toward government employees--the public sector. The learning paradigm emphasized in the present theoretical analysis will be classical defense conditioning. It should be noted that other learning paradigms could conceivably be employed in fruitful theoretical analyses of attitudes toward labor unions (e.g., classical reward conditioning, instrumental escape conditioning, instrumental reward conditioning, avoidance learning); however, the present analysis will be restricted to a classical defense conditioning analysis.

Boundary Conditions

In any science, a theory of the kind proposed here will often effectively reach phenomena considered unusual or inexplicable while excluding some commonplace events. This is because boundary conditions are employed for theoretical reasons that often are not compatible with conventional usages. Since a classical defense conditioning model is to be utilized in the present analysis, certain phenomena will be amenable to analysis while other events will be outside of the theory's intended scope. The present theory's intended scope is primarily focused on those individuals who are affected by a strike which they find aversive. At the outset it can be seen that certain identifiable

situations will be outside of these specified boundaries. Some illustrative situations outside of the boundaries of the present classical defense conditioning model can be specified.

Classical Reward Conditioning for Union Members. It is quite plausible that union members would associate positive stimuli with the union, necessitating the use of a classical reward conditioning model. A study by Goldberg (1974), for example, illustrates how a strike might become attractive rather than aversive for union members. Goldberg classified community environments during a 1966 New York City teachers' strike based on union members' perceptions of community approval (classified as signing petitions, joining picket lines, and offering homes for union activites; disapproval was classified as verbal abuse, demands to keep local schools open, and physical attacks). Goldberg correlated these perceptions of community support with strike solidarity. Higher percentages of strike solidarity were related to greater perceptions of community approval. In addition, teachers reported higher levels of tension when less approval and more disapproval were perceived. Community support would appear to endow a strike with appetitive characteristics for the union members. In such a case, a classical defense conditioning model might be appropriately replaced by a classical reward conditioning model.

Avoidance Conditioning for Union Members. Seidman, Edge, and Kelley (1974) found that a majority of Hawaiian faculty were

favorably disposed to collective bargaining. This favorable attitude appeared to be based on a key stimulus associated with unionization--protection against unfair treatment. If the union is associated with protection against unfair treatment, then it can be hypothesized that unionization might function as an avoidance or escape response analog from an aversive stimulus analog--unfair treatment. This line of analysis, while potentially fruitful, is beyond the boundaries of the present classical defense conditioning model.

Conflict for Union Members. A different way to view the strike as a stimulus analog for the union member would be via a conflict paradigm (e.g., Miller, 1944, 1959). The strike for a union member may have appetitive stimulus properties (e.g., associated with anticipated salary raises) as well as negative stimulus properties (e.g., presently being without a paycheck). This illustrative situation would be more compatible with a conflict paradigm than classical defense conditioning. Cole (1969) analyzed the conflict which can be created for the individual represented by a union sponsoring a strike. Cole surveyed New York teachers after a highly successful strike to examine social support stimuli and conformity pressures relevant to strike behavior. Of the teachers who indicated their friends supported the strike, a large proportion (69%) also struck. Few (26%) struck when less than half of their friends supported the strike. Four types of conflict ("cross pressures") were examined and found to lead to some form of

avoidance behavior (e.g., calling in sick rather than walking in or crossing a picket line). In addition, those teachers fearing sanctions for striking were more likely to avoid the situation than those without such fears. The study by Cole, then, indicates that the critical stimuli for a union member can at times be conflicting, requiring a substitute in the theoretical model employed.

Conflict for the Community. A strike could also potentially have conflicting associations for the community. For example, the community could identify with the strikers and the positive benefits the union would gain from the strike could be psychologically or actually shared (e.g., the public profits from better education for children via smaller classrooms or larger budgets). Lieberman (1956), for example, cited two cases in which community support for striking teachers was displayed (in a poll and an election). Flango and Dudley (1978) identified classes of people likely to support strikers. They found that young people, citizens favoring increased city wages, semi-skilled and unskilled workers, black people, and citizens dissatisfied with police treatment responded favorably in their attitudes toward strikers. If it can be assumed that these segments of the public identified with the union, then we can conclude that the strike as a stimulus analog could become attractive which would preclude a classical defense conditioning analysis. It can be hypothesized that some of the variables which would elicit identification with a striking union are potentially

quantifiable. One key variable that might cause an individual or group to identify with a striking union could be "perceived similarity" between the group (or individual) and the union. The relevant dimensions of this similarity might vary situationally. Illustratively, the firefighter and police occupations are often considered similar in professional responsibilities and relevant qualifications. If perceived similarity results in identification, then a strike by one group could be reacted to in a similar (and perhaps positive) manner by the other group. Some anecdotal support for this identification between fire and police services might be hypothesized from "sympathy strikes" of one occupation for another's grievances.

Rules of Correspondence

In attempting to explain and predict attitudes toward labor unions, analogies between classical defense conditioning variables and labor relations will be drawn. These analogies are presented below and enumerated for later reference.

Independent Variables

Unconditioned Stimulus Analog. A stimulus which initially elicits a reliable response is referred to as an unconditioned stimulus (UCS). The response which the unconditioned stimulus consistently evokes is called an unconditioned response (UCR). In classical defense conditioning, an aversive rather than attractive unconditioned stimulus is employed. The labor relations

literatures frequently conceptualize a strike or strike threat by public sector workers as analogous to an aversive stimulus, eliciting responses such as fear or anxiety among the public served by those workers. Hallem et al. (1972), for example, noted that initial attempts at organizing police were blocked because of the "public suspicion and fear of police strikes" (p. 907). Even the word "strike" itself has been noted to produce negative "emotional overtones" (Lieberman, 1956).

The aversive character of the strike can result from an absence of necessary services, particularly in the public sector. Striking police and firefighters can leave a city besieged by crime and violence (Clark, 1972). Similarly, numerous deaths and illnesses were attributed to a New York City truck drivers' strike ("Ransomed City," 1968; Stetson, 1968; Tolchin, 1968).

The above illustrations indicate that the strike has been depicted as possessing noxious properties, supporting the adoption of a classical defense conditioning model. For present purposes, the strike will be employed as an aversive stimulus analog (1).

Unconditioned Response Analog. The analog of the unconditioned response elicited by the strike or strike threat will be conceptualized as some negative affective response such as fear, anxiety, or a negative attitude regarding the strike (2). The following are illustrative negative affective responses cited in the labor relations literatures presumed to be caused by the strike or strike threat: (a) a fearful and suspicious public (Hallem et al.,

1972); (b) "hesitant" and "defensive" governments (Kheel, 1969); (c) negative attitudes toward striking teachers by governmental representatives, students, and parents. Specifically, a strike being referred to as "an irresponsible action", "a bad example to students", "a deliberate disregard for the public welfare", "a conscious defiance of the law", and "a blatant misuse of power" (Kassem & Mutterer, 1971, p. 82); (d) a teachers' strike editorialized as a "vicious power play" ("Destructive Strikes," 1968); (e) persistent "anger and ill will" predicted to result from an 18-day strike in Pennsylvania (Alderfer, 1972); and (f) pertinacious "conflict" and "bitterness" engendered by the strike (Rybacki & Rybacki, 1979).

The measurement of attitudinal responses in "management" samples has generally reflected negative sentiments regarding the strike. A majority of school administrators surveyed in 1946 were opposed to the right of teachers to strike and improve conditions of work (Lieberman, 1956). More recently, general disapproval of college presidents for faculty strikes has been documented (Spritzer & Odewahn, 1978). Similarly, a scant (26.4%) favorable opinion for the public employee's right to strike in a sample of administrators of various New York City agencies was revealed (Immerman, 1973). The community has also been shown to be opposed to teachers' strike activity (e.g., Lieberman, 1956).

Negative attitudes regarding the strike are particularly acute for public sector employees. This was demonstrated by McClain (1973) in a survey of freshmen at Texas Tech University.

Fewer respondents were favorable to the strike practice for police and firefighters (23.3%), governmental office and postal workers (29.4%), teachers (46.2%), or garbage workers (48.5%) than for general laborers and construction workers (71.4%).

The negative attitude regarding the strike in public sector employment is also reflected in current legislation which generally adopts an illegal strike model (Wellington & Winter, 1971).

Exceptions to this legislative strike ban rarely permit "essential" service personnel from striking (Barrett & Loebel, 1974). Kieta

(1970) stated that "if legislation is any indication of public opinion, it is safe to assume that the public is solidly opposed to strikes in government" (p. 226). Kieta's statement has been

supported by case and field studies (e.g., Alderfer, 1972, 1974; Anderson, 1969; Nesvig, 1968; Rains, 1969; Young & Brewer, 1970).

For example, Anderson (1969) related work stoppages to the amendments

of New York's Taylor Law which provides "stiffer" penalties for

strikers than did the original law. Alderfer (1972, 1974) reported

that a ten-and-a-half day teacher strike resulted in students'

request for an injunction. (Reports indicated citizen reactions

of the strike being "outrageous", "silly", "undignified", and

"dowright stupid".) Young and Brewer (1970) examined the responses

of governments to strikes and strike threats (between July, 1965 and

December, 1969). He found that nine governments had instigated

legal action (court injunctions) to restrain strikers, six had

threatened to fire strikers, and two governments had arrested

strikers. Rains (1969) and Nesvig (1968) related the passage of the Condon-Waldin Act in New York to the Buffalo teachers' strike of 1947. This legislation imposed severe penalties for strike activity. Nesvig also indicated that the legislation of eight anti-strike laws including the Taft-Hartley Act was concomitant with this strike. The fear of strike activity may have been generated by this fairly novel strike within the public sector. This analysis is supported by Nesvig's account of the typical pattern of a local government's reaction to an initial confrontation with "employee defiance": "First comes surprise. . . . Then may come exasperation, perhaps anger, and a feeling of helplessness" (p. 130).

Similarly, the Boston Police Strike of 1919 caused much opposition to the right of public employees to strike and even to unionize (Hallem et al., 1972). Public officials (e.g., President Wilson, Calvin Coolidge) expressed radical, negative sentiments about the strike against a "sovereign" authority (Nesvig, 1968).

Pointer and Graham (1971) reported that hospital administrators fear collective bargaining itself because of the feeling that "recognition of a union is a direct invitation to strike" (p. 56). Thornton and Weintraub (1974) reflected a similar attitude; they noted that "the granting of collective bargaining rights to teachers increases the probability that strikes will occur" (p. 39).

The preceding citations seem to indicate that negative affective responses can be elicited by the strike in the form of

attitudes, sentiments, legislation, and related behaviors. Such findings indicate that strikes function as a UCS which elicits a negative affective UCR, as in classical defense conditioning.

Conditioned Stimulus Analog. In classical conditioning, a previously neutral or indifferent stimulus is paired with the unconditioned stimulus. The neutral stimulus is termed a conditioned stimulus (CS). Since the interest of the present analysis concerns attitude change and formation toward labor unions, the labor union will function as a conditioned stimulus analog (3). Attitude objects have been repeatedly treated as conditioned stimuli (e.g., Byrne, 1969, 1971; Byrne & Clore, 1967; Doob, 1947; Lott & Lott, 1968, 1972; Staats & Staats, 1958). Therefore, there is ample precedent for the present conceptualization of the labor union as a conditioned stimulus analog.

Analogs of Variations in Reinforcement. Several other analogs in labor relations can be drawn from classical conditioning. For example, a reinforced trial in classical conditioning occurs when the conditioned stimulus is paired with the unconditioned stimulus (the reinforcer in classical conditioning). A reinforced trial analog in labor relations would be the association of the strike and a labor union (4). Continuous reinforcement in classical conditioning is the association of the conditioned stimulus and the unconditioned stimulus on every trial, analogous to a situation in which the union threatens a strike at each bargaining session with management (5). Partial reinforcement occurs when the conditioned

stimulus and the unconditioned stimulus are not paired on every trial. An analog of partial reinforcement in labor relations might be a hypothetical situation of strikes and/or strike threats being posed on some portion of the bargaining sessions, but not at each session (6). An extinction trial occurs when the reinforcer (UCS) is withheld; analogously, in labor relations, an extinction trial might be a bargaining session with the union not striking or threatening to strike (7).

Unconditioned Stimulus Intensity Analogs. The strength or intensity of the unconditioned stimulus can be varied in classical conditioning. In labor relations, a number of potential analogs for the intensity of the aversiveness of the unconditioned stimulus can be proposed. Illustratively, the duration of a strike (8), the number of people involved in a strike (9), or the essentiality of the service being withheld (10) are potential analogs of unconditioned stimulus intensity.

Conditioned Stimulus Saliency Analog. The properties of the conditioned stimulus can also affect conditioning; the saliency or intensity of the conditioned stimulus can also be manipulated. A conditioned stimulus' saliency or intensity is not limited to the actual properties of the stimulus. Other factors which aid in being able to distinguish or perceive the conditioned stimulus can affect its saliency (e.g., Logan, 1954; Mackintosh, 1974, 1975; Pearce & Hall, 1980; Wagner, 1978). A potential analog to conditioned stimulus saliency might be the press coverage which the union receives,

making it a prominent conditioned stimulus (11).

Analogs of Variations in Arrangement of CS and UCS. The temporal relationship between the conditioned stimulus and the unconditioned stimulus may also be modified. In classical conditioning, four types of connections between the conditioned stimulus and the unconditioned stimulus have been delineated and systematically investigated: (a) Delay conditioning--the conditioned stimulus precedes and overlaps the onset of the unconditioned stimulus. The offset of both stimuli occurs concomitantly; (b) Trace conditioning--the onset and offset of the conditioned stimulus precede the onset of the unconditioned stimulus; (c) Simultaneous conditioning--the conditioned stimulus and unconditioned stimulus' onset and offset are temporally identical; (d) Backward conditioning--the unconditioned stimulus precedes the conditioned stimulus.

Each of the temporal pairings of the conditioned stimulus and the unconditioned stimulus in classical conditioning can be extended to labor relations. Delay conditioning might occur if a union's collective bargaining negotiations are reported by the media to the public prior to and throughout the reporting of a strike (12). Trace conditioning could occur if a union is reported as being "in negotiations". Subsequently, a time period intervenes with no information concerning the union following which the media airs the fact that the union has struck (13). Simultaneous conditioning might be conceived as the hypothetical situation in which no prior account of negotiations are disclosed, just simply

the coverage of the striking union (14). Backward conditioning could occur if the strike were made known in advance of the particular union involved (e.g., "Newscapsule: Strike, details at ten") (15).

Analog of CS Intermittency and Constancy. In classical conditioning, researchers have contrasted the effects of presenting a constant and an intermittent conditioned stimulus. Such a variable could be fruitfully extended to labor relations since the reporting of a labor union in negotiations can be relatively constant prior to strike activity (16) or intermittent whereby negotiations break off and resume or are reported irregularly (17).

Dependent Variables

Conditioning is predicted to develop as strikes or strike threats are associated with the union. It is predicted that eventually the labor union should be capable of eliciting a response comparable to the negative affective response elicited by the strike. The response elicited by the conditioned stimulus subsequent to a series of reinforced trials (see analog #4) is termed the conditioned response. Although there may be slight qualitative or quantitative differences between the conditioned and unconditioned responses, the two are similar. For example, unconditioned eyeblink responses to air puffs may be stronger than those eyeblinks elicited by the conditioned stimulus; however, both responses can be topographically identified as eyeblinks.

Attitudes. One potential analog to the conditioned response

in labor relations is a negative attitude toward a labor union (18). Reports of negative attitudes toward labor unions are present in labor relations literatures. An extreme example is the following: "Organized labor, a smug, overfat slugabed in the general economy is militant on the march in all branches of the civil service" (Raskin, 1968, p. 27). Union members have also been identified as "unreasonable, selfish, and greedy" (Rybacki & Rybacki, 1979, p. 163).

Several studies have empirically documented the existence of negative attitudes toward unions. For example, a higher proportion of anti-collective bargaining attitudes for presidents than for faculty on several attitudinal items was found by Kennelly and Peterson (1974) in a large sample of university institutions. Since faculty can also associate positive stimuli with unionization (e.g., higher salaries, greater benefits), this result would be predicted by the present classical conditioning theory although explicit responses of union members have been placed outside the boundaries of the theory.

Kaufler (1967) stated that the majority of school boards in education prefer to forego collective bargaining and that they hold anti-union sentiments. Since school boards are elected, we could assume that they attempt to reflect actual community opinion on these issues. In addition, data are available which reflect opposition to unionism in higher education: Spritzer and Odewahn (1978) found general opposition toward collective bargaining for faculty in a sample of chief university executives. In addition,

a substantial number (85.9%) of the administrators believed that the community did not support unionism. Whether or not this belief reflected actual community support is debatable; however, it may be a more covert measure of the administrators' own attitudes. Similarly, an official policy may reflect such covert attitudes (Odewahn & Spritzer, 1976). The policies of higher education institutions were examined and found to be generally unfavorable to unionism (Odewahn & Spritzer, 1976).

Immerman (1973) found that a substantial majority (73.6%) of government executives in New York City held unfavorable opinions toward public employee unionism. These opinions were elicited by covert methodologies, perhaps revealing "deeper-rooted feelings" (Immerman, 1973). Davis and West (1979) also found that subtle phrasing of questions evoked negative attitudes toward unionization in a sample of county government supervisors.

Legislation. An increment in strikes or strike threats (refer to analog #4) can also affect the legislation enacted relevant to unionism. For example, public policy or legislation related to collective bargaining, the right to strike, or the agency shop are potential conditioned response analogs. These analogs will be comprehensively examined as a single, general analog--restrictive legislation (19). For example, a decrease in public support (14%) for public sector union shops and an increase in support (15%) for the right to work in public employment (without union membership) were the findings of a nation survey comparing

public attitudes in 1974 and 1975 (Kruger & Rodgers, 1978).

Predictions

The present classical conditioning theory can explain many events that have occurred in the field of labor relations as well as predict several lawful relationships which often have not been examined by investigators in this field. The novel predictions generated by this theory can direct future research along unique and systematic paths.

While the above rules of correspondence do not exhaust the potential analogs that could be drawn between classical conditioning and labor relations, they are sufficiently illustrative to indicate the potential fruitfulness that can be realized by applying classical defense conditioning to labor relations. These rules of correspondence will now be utilized to derive predictive relationships between the independent and dependent variables.

Reinforcement. In classical conditioning, the conditioned response is an increasing function of the number of reinforced trials. This is not specified as a simple linear relationship but as a negatively-accelerated increasing relationship (e.g., Spence, 1956; Rescorla & Wagner, 1972; Weiss, 1968). By combining rules of correspondence 4 and 18, it is predicted that the attitude toward a union will be increasingly negative as the union increasingly relies on strikes or strike threats. For example, the declining trend in approval of labor unions (e.g., "Approval of Labor Unions

Sinks," 1979) is predicted to be a function of the "seventeen-fold increase" in governmental employee work stoppages and job actions from 1958 to 1968 (Hallem et al., 1972; Immerman, 1973).

Potential overt behaviors resulting from the negative attitudes generated by increases in public employee militancy (Hallem et al., 1972; Immerman, 1973) might also occur. Lou Harris advised politicians to run on anti-union platforms in 1976 due to public animosity toward unions reflected in opinion polls (Kruger & Rodgers, 1978; Weitzman, 1976). Several investigators (e.g., Colton, 1978; Weitzman, 1976; Williams, 1977) have documented successful cases of politicians following the prescription to run "against the unions" (e.g., San Francisco's Board of Supervisors, San Diego's Mayor, Norfolk's Council). New York City's Mayor Lindsay also was found to receive strong public support in his denunciation of a striking union and of unions in general (Raskin, 1968).

Attitude change toward unions was demonstrated by Robertson (1979) in a simulation experiment with college students. On four attitudinal items related to unions and collective bargaining, management role players became significantly more anti-union after collective bargaining simulation experiences (for one semester), while union role players became significantly more pro-union. Unfortunately, the exact content of the simulation experiences is unknown; however, if strikes were threatened by the union role players or if other aversive events were associated with the union,

the increase in anti-union attitudes for the management role players would be predicted by the present theory. The present theory also predicts attitudinal changes for role players representing the public served by a striking union. Therefore, a simulation experiment examining the effect of collective bargaining dynamics on the public served by the union could be a fruitful area of investigation as well.

The wave of anti-union sentiments has also been felt by public employees themselves. Rybacki and Rybacki (1979) noted that a large portion of a sample of unionized teachers (82%) felt the community unfairly criticized them, perhaps a result of the gulf created between the community and the strikers. Raskin (1968) stated that "all the forces felt they were going downhill in public respect. 'People treat us like dirt,' was the way one sanitation worker phrased it. And the sense of second class citizenship was even stronger among policemen and firemen" (p. 29). Stone (1971) reported that strikes of police in New York City have resulted in a decline in their prestige. (This is also supported by Manfield's, 1976, analysis concerning the decline in prestige of public employment.) A sanitation truck driver in New York City was quoted as saying: "The civilians . . . blame the strike on us They think because we work with garbage that we're garbage" (Priol, 1976, p. B5).

Kelley and Edge (1976) examined the effects of this decline in general public opinion toward labor unions and their members.

They noted that in two years (1972-1974) attitudes of the University of Hawaii faculty became less "pro-union" (although no statistical tests compared these attitudes). The authors indicated that the decline in pro-union attitudes was caused by "critical, stinging remarks from the state legislature, a budget cut, and a poorly accepted negotiated contract" (p. 356).

The decline in organized labor's image and political setbacks have been postulated as two factors contributing to an increase in decertification of unions by their members (Dworkin & Extejt, 1979). The present theory is capable of integrating the data on increases in decertification that might result from these and related factors since it predicts that several variables will effect a decline in labor's image and the related political setbacks it receives.

Due to the type of relationship found in classical conditioning between the conditioned response and the number of reinforced trials, this theory makes the counter-intuitive prediction that at some point the harshness of the attitude toward the union will stabilize so that further strikes do not have further detrimental consequences on attitudes. In addition, initial encounters with strikes will have greater effects on attitudes than subsequent encounters (e.g., the increase from 1 to 5 strikes will have a greater impact on the harshness of attitudes than an increase from 30 to 35 strikes will). For example, the single, aversive Boston Police Strike of 1919 caused a "serious blow" to police unionism (Hallem et al., 1972). Such a reaction toward one strike would be predicted to be

unduly severe because the strike occurred early in conditioning rather than later.

Rules of correspondence 4 and 19 can be combined to yield the prediction that increased strikes or strike threats by a union would result in increasingly restrictive labor relations legislation. This relationship would also be in the form of a negatively-accelerated increasing function. Therefore, initial strikes will affect legislation to a greater extent than strikes occurring at a subsequent period in the conditioning process. Alderfer (1974) reported testimonies from a legislative hearing of Pennsylvania's Public Employee Relations Act (Act 195) which granted a limited right to strike for public employees. Generally, those individuals representing government commented unfavorably on this legislation in contrast to union representatives. In the extreme, one individual not only expressed an unfavorable attitude toward this particular legislation, but also favored limiting collective bargaining rights for public employees. Since this legislation had been associated with many strikes, particularly in the public schools, the present theory would predict harsh attitudes. (Alderfer reported that 159 strikes had occurred in three years subsequent to this piece of legislation.)

Anti-union legislation for governmental employees has become somewhat problematic. For example, Weitzman (1976) stated that "the increasingly chilly public climate for government employees" (p. 243) was related to: (a) the reduction by Congress of the federal pay

plan increase from 8.66% (recommended by the Civil Service Commission and the Office of Management and Budget) to 5%; (b) state and federal legislative candidates emphasizing opposition to public employee spending; (c) AFL-CIO recognition of Congressional allies voting in opposition to labor; (d) local and state demands for union concessions (e.g., improved productivity); and (e) the switch to non-support of comprehensive federal legislation for labor relations by many politicians.

Powerful unions in San Francisco have also received "backlashes" in the form of anti-union referenda (Williams, 1977). For example, the public passed legislation which required that any striking city employee be fired, that pay increases be restricted, and that the voters themselves would be the decision makers during negotiation impasses over wages.

The courts have also expressed anti-union behaviors. In New York punitive action for striking teachers was taken, no longer permitting the deduction of union dues from paychecks--a "right prized by unions" (Williams, 1977). The Supreme Court also ruled against public unions in decreeing that the Federal Fair Labor Standards Act minimum wage/maximum hour provisions not be extended to state and local governmental employees (Williams, 1977).

Wollett (1964) noted that strikes "alienate the public whose support is needed in order to finance improvements in the economic welfare and work situation of government employees" (p. 13). Thus a strike, while perhaps resulting in immediate gains for the public

employee, may result in long-term losses.

Foegen (1972) indicated that unlike employees in the private sector, public employees can be reached through law makers. Torrence (1979) further specified local governments as the target for frustrated citizens due to their proximity. A U.S. Department of Labor official was reported as stating that the public saw New York City municipal unions in a "bad light" due to strikes and their financial effects (Ledbetter, 1976).

The result of these frustrations (from strikes and increased taxes) could result in anti-labor legislation (Foegen, 1972). Increases in opposition to collective bargaining legislation have been noted (Colton, 1978; Kruger & Rodgers, 1978). For example, Ohio, Texas, and California have been documented as localities where a lack of endorsement for collective bargaining legislation has occurred (Kruger & Rodgers, 1978). In addition, a federal district court upheld the firing of 100 striking teachers in Michigan which was presumably caused by "sour" public attitudes (Kruger & Rodgers, 1978).

In classical conditioning, a comparison between continuous reinforcement and partial reinforcement finds superior conditioning for a conditioned stimulus that has been continuously associated with an unconditioned stimulus than one that has been only partially associated with the reinforcer (e.g., Fitzgerald, 1963; Gormezano & Moore, 1969; Wagner, Siegel, Thomas, & Ellison, 1964). It is therefore predicted that a union which strikes or threatens to

strike at every bargaining session will suffer a greater negative reaction (attitudes and legislation) than one which is less regularly associated with strikes or strike threats (via rules of correspondence 5, 6, and 18 and 5, 6, and 19). Reinforcement might be hypothesized as being more prevalent in the public sector than in the private sector where the economic adversities of a strike can be abated through stockpiling or wage-benefit trade-offs (Clark, 1972; Wellington & Winter, 1970). The presence of a potential avoidance or escape response in the private sector might reduce the number of associations between the conditioned stimulus analog, the labor union, and the unconditioned stimulus analog, the strike. The result of this situation would then be a weaker conditioned response in the private sector than in the public sector (where associations between the union and the aversive strike are more abundant).

Extinction. Withdrawing the reinforcement (UCS) in classical conditioning results in "gradual disappearance" of the conditioned response (Mackintosh, 1974). By combining rules of correspondence 7 and 18, it can be predicted that a cessation of strike activity by a union would result in a gradual reduction in the negative attitude that had been conditioned to the particular union (resultant from prior strike activity--reinforcement). Similarly, rules of correspondence 7 and 19 can be combined to predict that terminating strike activity would result in a decline in restrictive legislation. This would not necessarily enfeeble the union if

unions were not almost exclusively dependent upon the strike to redress grievances. For example, codetermination on the West German model reduces the frequency of strikes while strengthening the union (application to the public sector poses special problems).

Zack (1968) noted that public annoyance has resulted from an increased strike frequency in public employment. Therefore, he prescribed third party interventions for facilitating negotiations and thereby curtailing strike activity. The present theory predicts that such a method, if it actually resulted in a decline in strikes, would be an effective method of changing public opinion since it would be analogous to extinction.

Other data relevant to the extinction process are available in the findings of Martin, Barclay, and Biasatti (1979) who empirically related managerial and union attitudes (measured via survey and interview techniques) and the success of the union-management relationship (measured via the "frequency of reported union-management problems", p. 174) in six federal government organizations at two separate time periods (1972 and 1976). While the researchers were interested in the causal effects of attitudes on success, their data do not allow a determination of causality. However, they did find that a reduction in the frequency of problems occurring in the union-management relationship (related to grievance handling, negotiations, and civil service regulations) was significantly associated with favorable managerial attitudes toward the union. Since union members were shown earlier to be

not included in the present theory's intended scope and subject to different principles, the lack of a significant relationship between union attitudes and frequency of problems poses no problems for the present theory. The authors attempted to explain their results through a notion that managerial attitudes, unlike union attitudes, impinge on the climate of the union-management relationship thereby affecting the success of the relationship. The present theory explains these data via the process of extinction, the decline in the frequency of problems resulted in a more favorable (less unfavorable) managerial attitude.

Counterconditioning. Another method of potential utility for changing the attitudes formed about the union is counterconditioning. In this procedure, a stimulus that has been previously associated with unpleasant stimuli is associated with pleasing, attractive stimuli (e.g., Melvin & Brown, 1964; Pearce & Dickinson, 1975). Analogously, the union previously associated with strikes or other unpleasant stimuli would become associated with pleasing, attractive events. Rybacki and Rybacki (1979), for example, suggested that the union attempt to modify their image to one of an "ongoing change agent in the community" (p. 167) by not confining its exposure to negative events such as strikes but also incorporating positive identifications. If the change was a complete reversal to positive associations, counterconditioning would be predicted.

The prescription of a non-stoppage strike whereby services are uninterrupted but labor and management both receive financial

reductions during the strike (Kassem & Mutterer, 1971) is also interesting from a learning theoretical view. Kassem and Mutterer noted that this procedure "may be the most effective way of reducing negative public reactions to teacher demands" (p. 86). This recommendation would be supported if the union, previously associated with strikes, subsequently becomes associated with positive stimuli, resulting in counterconditioning. However, Kassem and Mutterer's prescription seems rather to entail neutralization of the aversive unconditioned stimulus analog, the strike, which could also be an effective method for curtailing negative attitudes. Whether or not this is the most effective method, however, is debatable.

Generalization. In classical conditioning, the conditioned response will generalize to other similar conditioned stimuli; however, the magnitude of the conditioned response will decrease as the stimulus becomes less similar to the original conditioned stimulus (e.g., Siegel, Hearst, George, & O'Neal, 1968; Weiss, 1963). In examining labor relations, interest lies in the degree to which a negative attitude is reflected about a given union (union A) based on prior experience with another striking union (union X). In this example, union A has never struck, never threatened to do so, but suffers hostility based on generalization. Why should this generalization develop? Generalization is facilitated by similarity between stimuli. Thus, if union A is very similar to union X, generalization would be greater than if union A is dissimilar to

union X. Whether union A is more or less similar to union X than is union B could also be examined. If union A is more similar to union X than is union B, then we could predict greater generalization of negative attitudes to union B than to union A (given that union X has been reinforced; i.e., associated with strikes and/or strike threats).

Although similarity in learning experimentation has often been confined to physical variations in stimuli (e.g., along auditory or visual dimensions), those who have boldly extended learning principles to social behaviors have transcended a purely physical approach to stimulus similarity (e.g., Miller & Dollard, 1941; Weiss, 1963; Weiss & Miller, 1971). The similarity among labor unions could be based, for example, on the occupation involved; police and fire fighters might be considered similar on the dimension of essentiality and have common employment requirements.¹ The example cited earlier of the AFL-CIO's perception that their relationship to public unions had caused allies in Congress to become hostile toward them (Kruger & Rodgers, 1978; Weitzman, 1976) might be conceptualized as a case of generalization.

Discrimination. The antithesis of generalization is discrimination. A procedure for facilitating a discrimination is extinction. If union A repeatedly does not strike while union X continues to strike, extinction of the generalized negative attitude to union A should occur with a resulting discrimination between the two unions.

This procedure for facilitating a discrimination may have occurred in the data reported by Odewahn and Spritzer (1976)--that college presidents with collective bargaining experience were more favorably inclined to unionization in higher education than college presidents without such experience (65% versus 45% favorability). These results can be predicted by the present theory if three plausible assumptions are made: (a) a negative attitude results from the association of "unionization" with unpleasant consequences (this assumption has been supported by evidence previously cited); (b) the conditioned negative attitude generalizes to other existing unions and proposed unions; (c) in the above example (Odewahn & Spritzer, 1976), the college presidents favorably inclined to unionization suffered no strike activity at their institution. If the above three conditions hold, then the present theory would predict that those university presidents with collective bargaining experience were capable of making a useful discrimination. While initially generalization would occur to the faculty union, thus eliciting a negative attitude, extinction via non-reinforcement (lack of strikes) is predicted to eventually result. In the Odewahn and Spritzer illustration, it would be predicted that the presidents without collective bargaining experience were unfavorably disposed to collective bargaining in higher education because their negative attitudes caused by striking unions were not extinguished, but rather generalized to faculty unions.²

If in the above illustration (Odewahn & Spritzer, 1976)

pleasant events, rather than simply a lack of unpleasant events, were associated with the faculty union, then counterconditioning of the generalized negative attitude would be predicted to occur. This might be a more efficacious technique for facilitating a discrimination, particularly if the response is highly resistant to extinction.

UCS Intensity. A conditioned stimulus associated with a very intense unconditioned stimulus produces stronger or more measurable conditioned responding in classical conditioning than one associated with a weak unconditioned stimulus (e.g., Lombardo, Weiss, & Stich, 1971; Rescorla & Wagner, 1972; Spence & Spence, 1966; Weiss, 1968; Weiss, Weiss, & Chalupa, 1967). Combination of rules of correspondence 8 and 18 results in the prediction that unions associated with long strikes will eventually be faced with stronger negative attitudes than unions associated with short strikes.

Support for the preceding prediction is provided by Immerman (1973). Administrators of a governmental department which had recently experienced "a crippling strike of long duration" (p. 104) showed the least favorable attitudes toward labor unions in comparison to other departments without such aversive associations. The description of the strike as "crippling" and "long" could imply not only a duration factor but also a strike that was widely supported. Rules of correspondence 9 and 18 can be combined to derive the prediction that strikes which are widely supported by union members will result in more negative attitudes than those

strikes in which fewer members are engaged.

Strikes in an essential service (e.g., fire or police services) should be more negatively responded to than a strike in a non-essential service (predicted via rules of correspondence 10 and 18). This prediction is supported by McClain's (1973) survey of freshmen at Texas Tech University. He found that students were less favorable to unionization of police and firemen (52.9%) than teachers (71.1%) and even less supportive of unionization of government office and postal workers (49.5%). In addition, a public sector/private sector distinction is available in McClain's data. Much greater support for unionization of general laborers and construction workers (90.3%) than for the public sector occupations cited above was found by McClain. Support was also more favorable for auto workers, teamsters, and dock workers (85.9%) than for the public sector.

The reduced aversive nature of the unconditioned stimulus analog for non-essential service strikes as compared to essential service strikes was examined by Burton and Krider (1970) via the variables length of strike and partial operations. They found that strikes in non-essential services were longer (10.6 days) and less likely to undergo some form of partial operations (77% of the time) than strikes in an essential service (duration was 4.7 days and partial operations occurred 92% of the time).

More restrictive legislation dealing with collective bargaining, right to strike, and agency shops would also be predicted when a

union is associated with a long strike, a widely supported strike, or a strike of essential workers. This is predicted by combining rules of correspondence 8, 9, and 10, respectively, with rule of correspondence 19. For example, a national survey found a general disfavor for the public employee's right to strike; however, attitudes varied and were contingent on the referent group ("Survey Finds," 1978). The public most vehemently opposed police and firemen's strike rights (64% and 66% opposed, respectively), followed by postal workers (58% opposition), sanitation employees (53% opposition), and teachers (51% opposition). In addition, an overall increase was reported in the opposition for the right to strike for these employees from 1975 to 1978. (Opinions regarding postal workers' right to strike were not surveyed during 1975.)

Burton and Krider (1970) found that injunctions were sought and granted most frequently in strikes of essential services (35% granted) in comparison to work stoppages involving intermediate-service employees (25% granted) or non-essential services (19% granted). In addition, essential-service personnel were fired less frequently than less-essential employees as a result of the strike. Burton and Krider attributed this latter finding to the "short-run indispensability" of employees providing essential services.

Within legal strike model states, as previously noted, the employees providing essential services are generally not given the freedom to withhold their services. An extended version of a model for strikes dealing with essentiality of services allows non-

essential service employees to strike for an unlimited length of time, intermediate-service employees to strike for a limited duration, and essential-service providers are given no right to strike (Brookshire & Holly, 1973).

If the public sector is conceptualized as being more essential than the private sector (due to greater inelasticity of demand and non-substitutability of services), then a strike in the public sector should result in more restrictive legislation and harsher attitudes than a private sector strike. Zack (1968) supported this prediction by noting a differentiation based on public sector strikes being "more immediate and more disruptive to our daily activities" (p. 70). Anecdotal accounts of events which emphasize the direct and disruptive effects of public sector strikes are available in the literature (e.g., Foegen, 1972; Zack, 1968). These effects are contrasted with the effects of strikes in industry which are "sufficiently remote from our immediate needs that we have come to accept them" (Zack, 1968, p. 69).

Hallem et al. (1972) summarized the distinction between the aversiveness of the strike in industry and government and the resulting outcome for the public sector: "Because of the vital functions that public employees serve in their communities, the public reaction to their job actions have been swift, strong and overwhelmingly negative" (p. 888). Such reactions are predicted by the present theory.

CS Saliency. Generally, a salient conditioned stimulus will more readily become associated with the unconditioned stimulus than an obscure stimulus (e.g., Greer, Hitzing, & Schaeffer, 1966; Gormezano, 1972; Grice, 1972, 1977; Kamin, 1965; Logan, 1954, 1977; Rescorla & Wagner, 1972). It would thus be predicted that striking unions receiving substantial press coverage would experience resistant public attitudes as well as more circumscribed legislation relative to striking unions that receive little or no press coverage. These predictions are derived from the combination of rules of correspondence 11 and 18, and 11 and 19, respectively.

For example, education and health service work stoppages have been noted to receive an abundance of public attention (White, 1969). Robins (1969) noted that work stoppages, themselves, have "claimed a disproportionate share of public interest" (p. 316). However, this effect has been cited as being more pronounced in the public sector based on its enhanced aversiveness relative to the private sector. Since the public sector strike receives "thorough and critical press coverage" unlike a strike in the private sector (Zack, 1968, p. 70), public attitudes and legislation are predicted to reflect this distinction. Evidence cited earlier supports this (e.g., McClain, 1973). Weitzman (1976) noted that "public attitudes toward unions have undoubtedly been affected by highly publicized strikes of police in San Francisco, firemen in Kansas City, doctors in Chicago and Los Angeles, and teachers in Pittsburgh" (p. 244). Such responses are predicted to occur by the

present theory.

Interaction of UCS Intensity and Trials. In classical conditioning, an interaction between unconditioned stimulus intensity and the number of conditioning trials exists in the form of a multiplicative relationship (diverging curves, e.g., Spence, 1956; Weiss, 1968; Weiss, Chalupa, Gorman, & Goodman, 1968). A strong, intense unconditioned stimulus results in greater increments in conditioning over trials than does a weak unconditioned stimulus. In labor relations, it would be predicted that a greater disparity in attitudes would result in an increase in the number of long strikes than an increase in the number of short strikes. This prediction is derived by combining rules of correspondence 8 and 18. Similarly, legislation should be more restrictive when an increase occurs in long rather than short strikes (based on rules of correspondence 8 and 19). Similar predictions can be derived from the combination of rules of correspondence 9 and 10 with rules of correspondence 18 and 19; illustratively, the divergence in attitudes resulting from three police strikes as compared to one police strike is expected to be greater than the divergence in attitudes for three versus one teacher strike.

CS-UCS Arrangements. The variety of temporal relationships employed in classical conditioning can affect the conditioned response observed. Simultaneous conditioning generally elicits a weaker conditioned response than that generated by the use of delay or trace conditioning procedures (e.g., Bitterman, 1964;

Greer, Hitzing, & Schaefer, 1966; Fitzwater & Reisman, 1952; Smith, Coleman, & Gormezano, 1969). Similarly, backward conditioning is generally considered to be a fairly unreliable method of conditioning (e.g., Fitzwater & Reisman, 1952; Kimble, 1961; Mackintosh, 1974; Smith, Coleman, & Gormezano, 1969; Trapold, Homzie, & Rutledge, 1964). However, conditioning has developed with both simultaneous and backward conditioning procedures when a relatively long duration unconditioned stimulus is employed (Heth & Rescorla, 1973; cf. Heth, 1976; Holmes & Davis, 1979). In addition, conditioning in which verbal mediations and similar cognitive processes have been documented to occur in humans has evidenced reliable backward conditioning (Zeiner & Grings, 1968). Delay conditioning generally produces a superior conditioned response to trace conditioning (e.g., Kamin, 1965).

Based on the above relationships, it would be predicted that the procedure which would be expected to result in the most severe negative attitudes and restrictive legislation would be the following: When a union is reported as being in negotiations for an interval prior to and during a strike (predicted by combining rules of correspondence 12 and 18, and 12 and 19). The simultaneous presentation of the union engaging in strike activity should be a relatively inefficient method of producing negative responses (based on rules of correspondence 14 and 18, and 14 and 19). However, when the union engages in a lengthy strike, this type of presentation can be effective in developing significant negative

attitudes and restrictive legislation (based on a combination of rules of correspondence 8, 14, and 18 and 8, 14, and 19). The reporting of a strike prior to disclosure of the union involved could produce negative attitudes toward the union or restrictive legislation relevant to the union if the individual making the response employs verbal responses so that the strike is anticipated when the union occurs.³ This prediction is derived from rules of correspondence 15 and 18, and 15 and 19. But if the strike was relatively lengthy, then, in spite of the fact that the strike was reported prior to disclosure of the union, negative attitudes and restrictive legislation may indeed develop. This prediction is based on a combination of rules of correspondence 8, 15, and 18 and 8, 15, and 19. Another effective method of conditioning the negative attitude toward the union and producing restrictive legislation would be when the union is reported as striking subsequent to negotiations with a time period intervening between the negotiations and the strike (via rules of correspondence 13 and 18, and 13 and 19).

Since press coverage is involved in each of the situations described above, conditioned stimulus saliency effects are also involved. Thus unions which receive substantial press coverage when they are in negotiations which precede and overlap a reported strike threat should incur harsher attitudes and legislation than unions without extensive media coverage (via rules of correspondence 11, 12, and 18; 11, 12, and 19). The effectiveness

of trace conditioning in producing reliable conditioned responses has been shown to be a function of conditioned stimulus saliency in classical conditioning, with greater conditioning with strong conditioned stimuli and little, if any, conditioning with weak conditioned stimuli (Kamin, 1965). Thus the effect of media coverage should be quite significant when an interval separates negotiations and a strike. It would be predicted that when the union receives extensive coverage during negotiations and a strike ensues at some later date, negative attitudes and restrictive legislation will be more likely to result than when the union negotiations are not covered with such intensity (based on the combination of rules of correspondence 11, 13, and 18; 11, 13, and 19).

Constant and Intermittent CS's. In classical conditioning, an intermittently presented conditioned stimulus will result in more effective conditioning than a constant conditioned stimulus (Gormezano, 1972; Papsdorf, Fishbein, & Gormezano, 1964). By combining rules of correspondence 16, 17, and 18, it can be predicted that a union represented to the public intermittently in negotiations prior to strike activity would receive harsher attitudes directed at them than one whose negotiations are reported relatively continuously. Similarly, a union receiving intermittent press coverage prior to a strike should be faced with more restrictive legislation than one receiving continuous coverage (via rules of correspondence 16, 17, and 19). To control for the effects of

the conditioned stimulus saliency analog, however, the total amount of reporting should be the same in the intermittent and constant conditions described above.

Discussion

Compound Conditioning

Some recent developments in classical conditioning have implications for the effects of more than one conditioned stimulus in the conditioning paradigm. This literature is denoted as "compound conditioning" (e.g., Kamin, 1968, 1969; Rescorla & Wagner, 1972; Wagner, 1969). These developments would appear to be of particular relevance to social behavior since social cues are often present in intricate compounds in the social environment. Some of the unique relationships available through examining situations involving more than one conditioned stimulus will be briefly presented and extended to labor relations. As before, these extensions will be illustrative rather than exhaustive.

Typically, it has been assumed that reinforcement results in increases in conditioned responding and non-reinforcement results in decreases in conditioned responding. However, experimentation in learning has shown this to not be the established fact it was once believed to be. Rather, investigators have shown that if a conditioned stimulus (X) is reinforced in the presence of another conditioned stimulus (A), then the prior history and properties of stimulus A are relevant and can have an impact on the conditioning

accruing to stimulus X (e.g., Kamin, 1968, 1969; Rescorla & Wagner, 1972). For example, if stimulus A is an exceptionally vivid stimulus, it can "overshadow" stimulus X, a less-salient stimulus, the result being that even though both stimuli are present and reinforced by the unconditioned stimulus, stimulus A acquires more conditioned response strength than stimulus X. Similarly, if stimulus A had prior associations with the unconditioned stimulus so that in essence it has become a "signal" (Wagner, 1969) for reinforcement, then stimulus A can "block" any conditioning to stimulus X even if stimulus X is reinforced (together, in compound, with stimulus A).

These two phenomena, overshadowing and blocking, could be important to an analysis of the conditioning of hostility to labor unions. Often different labor unions are associated with each other, either through a formal affiliation or solely through the public's perception of them. A labor union that has received substantial press coverage (conditioned stimulus salience analog, refer to rule of correspondence #11) might preclude the development of hostility toward its affiliate even though both are on strike.

However, this seems to be opposed to a concept of "guilt by association". Learning researchers have investigated such a phenomenon termed "sensory preconditioning" (Brogden, 1939). Sensory preconditioning results when two stimuli (A and X) are paired prior to the reinforcement of one, stimulus A. Subsequent to reinforcement of stimulus A, testing shows that conditioned responses are also elicited by stimulus X even though it has never

been reinforced. For labor unions, sensory preconditioning might develop if two unions (union A and union X) are affiliated prior to strike activity by one, union A. The strike activity of union A results in negative attitudes to not only itself but also to the "innocent" union X. Here, however, the press coverage to both unions should be roughly equivalent so that one union is not more salient than the other.

Another situation could be conceived in the area of labor relations: One union, union A, has a long history of strike activity. Subsequently, union A becomes affiliated with union X and both go on strike. In this case we would predict that hostilities to union X would not develop but would rather be blocked by union X's association with union A (which already elicits substantial hostility).

In learning, it has been discovered that a stimulus will not be blocked when it is presented in compound with a previously reinforced stimulus if the intensity of the unconditioned stimulus is increased during compound conditioning ("unblocking", Kamin, 1968). Thus, if the strike by unions A and X was longer in duration (rule of correspondence #8), more widely supported (rule of correspondence #9), or involved more essential services (rule of correspondence #10) than the previous strike activities of union A, it is predicted that hostility toward union X would develop.

Other interesting situations involving analogs of overshadowing, sensory preconditioning, blocking, and unblocking are available by

examining different types of conditioned stimulus analogs. For example, we might compare the hostility developed to a union leader and the union members that could result from excessive media coverage of the leader's activities, predicting the overshadowing of the striking members by their leader. Another variant might focus on the effect of union endorsement of a political candidate. If the endorsement occurred prior to strike activity, a situation resembling sensory preconditioning could occur. Therefore it would be predicted that animosity would be conditioned to the political candidate. Alternatively, if a political candidate were to ally him/herself with a union with a prior strike history, subsequent strikes should block antagonism directed at the political candidate (unless the strikes became longer, more widely supported, or involved a more essential service than prior strikes by the union).

In learning research, it has also been discovered that an aversive excitor (a conditioned stimulus which has been consistently paired with an aversive unconditioned stimulus) will block the conditioning of stimuli subsequently associated with the absence of an attractive stimulus (e.g., Dickinson & Dearing, 1979; Fowler, 1978; Fowler, Goodman, & DeVito, 1977; Fowler, Goodman, & Zanich, 1977). This finding could also be applied to labor relations: A political candidate endorsed by a union with a militant history ("aversive excitor") should not suffer dissaffection when the candidate and the union are subsequently associated with an absence of agreements or information supporting a voter's opinions on certain issues

(attractive stimuli, see, e.g., Byrne, 1971; Lamberth, Gouaux, & Davis, 1971; Weiss, Miller, Steigleder, & Denton, 1977). In other words, the militant union which has come to signal negative hedonic outcomes (strikes) for the voter will block the conditioning of dislike to the political candidate even though the candidate (together with the union) no longer agrees with or supports the voter on certain issues. If the union and the candidate go a step further and disagree with the voter (rather than being neutral), blocking would still be predicted if the disagreements were not more aversive than were the prior strikes. An increase in aversiveness, for example, disagreements on extremely important issues (see, e.g., Clore & Baldrige, 1968; Lombardo, Libkuman, & Weiss, 1972), would yield unblocking, resulting in a dislike for the union-endorsed candidate.⁴

Escape and Avoidance Conditioning

Other paradigms of potential application for labor relations scholars would be escape conditioning and avoidance conditioning. In these learning paradigms, the behavior allowing an individual to escape or avoid the noxious stimulus might be socially interesting. For example, Peterson and Tracy (1977) found that when the costs of a strike were expected to be high, the constituents of both union and management negotiators were more likely to support the negotiated settlement than when strike costs were not expected to be so extensive. Extensive costs of a strike might be considered a highly aversive stimulus. For management, some of these potential costs have been

delineated under the rubric of unconditioned stimulus intensity analogs. When a response can be made which will escape or avoid the extensive costs of a strike, it will be reinforced. One illustrative response would be supporting a negotiated settlement.

Although restrictive legislation has been examined in the present analysis as a conditioned response in a classical defense conditioning paradigm, it could also be potentially conceptualized as an avoidance or escape response analog. For example, if legislation disallowed collective bargaining, the public would be able to avoid the union which has acquired aversive characteristics based on its association with the strike. Similarly, if legislation disallowed the strike, presumably the strike would be avoided. It is interesting to note that labor relations scholars have increasingly observed that legislation banning strike activity is ineffective (e.g., Wellington & Winter, 1971). Another way to view the inefficacy of strike bans is that they do not allow the public to avoid the strike. As a result, alternate responses are made to attempt the escape from or avoidance of the aversive strike (e.g., arbitration, the non-stoppage strike--Kassem & Mutterer, 1971) until one response is successful in eliminating the aversive analog. This type of trial-and-error behavior has been demonstrated in avoidance learning experiments (Miller, 1951) when the contingencies of reinforcement are modified so that the response (banning the strike or banning the union) no longer avoids or terminates the aversive stimulus (the strike or the union which has acquired aversive

properties through its association with strikes).

The specification of variables affecting these and other imaginable responses which allow the individual to escape from or avoid the noxious strike or even the union which has acquired aversive characteristics are numerous (see, e.g., Weiss, 1980). The examination of analogous variables and relationships might prove to be a fruitful line of inquiry in labor relations.

For the union members who are on the receiving end of the harsh attitudes, it can be predicted that certain responses will be emitted which enable them to escape or avoid these negative sentiments. A steady increase in the rate of union decertification has been reported; and future researchers and theorists have been entreated to proceed in developing theories and analyses which "will enable us to better understand the motivations underlying the union decertification process" (Dworkin & Extejt, 1979, p. 245). Learning theory can be of tremendous assistance in such a development. It allows the prediction not only of the motivation behind the decertification process (e.g., escape from or avoidance of harsh attitudes or aversive stimuli) and the variables influencing this process, but it also permits the prediction and explanation of the process underlying the formation of the harsh attitudes.

Conclusions

Support for the classical defense conditioning theory proposed in this paper is substantial. The theory developed in this paper

which draws analogies between classical defense conditioning and labor relations integrates a substantial, diverse body of literature. In addition, a myriad of predictions have been derived which are capable of leading future investigations in the field of labor relations in several original directions.

Many individuals have discussed the relationship between strikes and attitudes. Kruger and Rodgers (1978), for example, noted an "interesting implication" of this relationship: "That public employees themselves help to form public opinion toward their own strike behavior" (p. 275). Similarly, according to Rotigel (1967), John Dewey noted the capacity of teachers to "shape public opinion through their labor affiliation" (p. 21). Learning theory brings out the interesting aspects of this process and expands on it in several unique and intriguing paths.

Immerman (1973) stated that "the question of employee militancy in government is of increasing concern" (p. 98). Immerman further observed a lack of systematic investigations concerning the attitudes toward public unions. As in other fields, for systematic investigations to proceed, theories must be available to guide research and integrate the established relationships with other information in the field. This paper has shown that learning theory can fulfill these functions. Learning theory can explain many existing facts and it can guide future research in numerous, captivating directions. The "question" of employee militancy, when investigated with the guidance of a theory and incorporated within

an elegant theoretical network, should become more predictable and explainable and, in time, more thoroughly understood.

Footnotes

1. Weiss (1963) has elaborated on the problem of measurement of non-physical stimulus similarity, recommending the technique of multi-dimensional scaling.

2. It should be noted that public opinion polls often survey respondents concerning attitudes about "labor unions" without requiring any discrimination between specific unions. Even in those cases in which occupational categories are identified, there may be a lack of specificity necessary to determine whether a discrimination has developed.

3. For those investigators interested in laboratory simulation techniques, Spence (1966) and Ross and Ross (1972) have emphasized the use of masking tasks to control the potential confounding of cognitive factors. These factors could affect the backward conditioning technique in some, but not all, subjects (see Zeiner & Grings, 1968), making the results prone to a high degree of error variance. Zeiner and Grings (1968) have used an alternate technique that might also be employed for control purposes. This procedure involves separating a backward conditioning group into subjects employing cognitive mediations and subjects without these cognitions regarding the conditioned stimulus (based on inter-trial interval reports and post-experimental interviews).

4. If agreements are considered as negative rather than positive reinforcers (e.g., Byrne, 1969; Byrne & Clore, 1967; Lombardo, Libkuman, & Weiss, 1972; Lombardo, Tator, & Weiss, 1972),

then blocking should still ensue as long as there is no increase in unconditioned stimulus intensity from strikes to agreements.

CHAPTER V

SUMMARY AND CONCLUSIONS

The general approach denoted by Neal Miller (1959) as "extension of liberalized S-R theory" was employed in this paper for three distinct areas of management: (a) job redesign, (b) the Hawthorne studies, and (c) attitude formation and change toward labor unions. In the first application in this endeavor, job redesign was systematically examined from a learning theoretical perspective. Sources of drive that can be potentially introduced with a job redesign program were described and their effects on the behavior of employees were elaborately specified. The advantages of extending a wide variety of learning theoretical principles and paradigms was demonstrated; many specific predictions were generated and several existing facts in the literature were shown to be explainable by this elegant theory.

Next, several studies undertaken at the Hawthorne plant of the Western Electric Company were analyzed and shown also to be capable of being integrated by learning theory. Evidence taken from the reports of these classic studies was used to substantiate certain assumptions which were made regarding appropriate analogs

of learning theoretical variables. As with job redesign, evidence for several sources of drive in these studies was reported and the effects on the behavior of those involved in these respective studies were specified. Again, learning theory was shown to be capable of integrating many of the reported results of these studies. In addition, learning theory is capable of analyzing other "Hawthorne effect" types of situations. The specification of the critical variables involved in such a situation is important for field studies undertaken in several areas (e.g., educational psychology, organizational behavior, organizational development); learning theory permits this specification. Thus, Somner's (1968) plea for an understanding of the Hawthorne effect itself is assisted by the present learning theoretical analysis. Rubeck's (1975) conclusions regarding the absence of any involvement of the Hawthorne effect in research concerned with "higher levels of thinking involved in the process of reading" (p. 379) is also subsumable by this analysis. Such a conclusion can be justified by learning theory. In addition, the specification of appropriate techniques involved in the design of educational and other types of field research involving complex tasks could also be undertaken. For example, researchers would want to eliminate any evaluational cues and they should attempt to make the observation and measurement of crucial dependent variables as unobtrusive or neutral as possible. If evaluational cues were present, rather than a "Hawthorne effect" (e.g., increased productivity) one might observe, instead, a

debilitation of performance, a high error rate, etc.

In the third application of learning theory, attitudes toward labor unions were analyzed. Classical defense conditioning was used as a model to predict and explain the effects that a strike (as an unconditioned stimulus analog) can have on both attitudes and legislation. A large body of literature was explained by this theory; in addition, several heretofore unexamined predictions were derived. These predictions were rigorous and precise, allowing future research in this area to be guided in a unique and systematic direction.

There is no reason to believe that the three research areas examined in this paper are unique in their ability to be integrated by learning theory. Learning theory can potentially be a fruitful, heuristic device for other areas of management as well. There are no guarantees that such a strategy will always be successful. There is no reductionist philosophy inherent in this strategy that implies that it must. However, the successes of extending learning theory to management demonstrated in the present paper are encouraging for future endeavors.

Berger and Lambert (1968) noted learning theory's aesthetic power based on the "surprising 'rediscoveries' of its lore in strange empirical places" (p. 161). Some of these "rediscoveries" have been previously noted for a wide range of socially rich topics. Although Berger and Lambert were referring to learning theoretical applications to social psychology, it is the tenet of this paper

that many research areas of management could be similarly benefited by the application of learning theory. The extension of learning theoretical principles, when appropriate, could permit precise hypotheses to be predicted and known relationships to be explained. As a result, a guidance to research would be made possible, and organized, integrated knowledge would become feasible. These potential outcomes of such an endeavor are worthy indeed!

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