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CASE STUDIES IN ORGANIZATIONAL BEHAVIOR MODIFICATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

William Butler Abernathy, B.A., M.A.

* * * * *

The Ohio State University

1978

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ACKNOWLEDGMENTS

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VITA

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Major Field: Psychology

Studies in Applied Behavior Analysis. Professors David Hothersall and Dennis Nolan

Studies in Organizational Behavior Modification. Professors David Hothersall, Milton Hakel, and Robert Billings
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I. INTRODUCTION

Overview of Organizational Behavior Modification

Organizational behavior modification (OBM) is a relatively new approach to industrial and organizational management. One of the early advocates for organizational applications of behavior modification was Owen Aldis (1961) in his article "Of Pigeons and Men." Subsequently, few articles concerning OBM occurred through the 1960's. In the 1970's publications advocating OBM began to reappear and interest began to rapidly accelerate. Examples of these advocacy articles include; Beatty and Schneier (1975), Brethower and Rummler (1973), Fry (1974), Goldstein and Sorcher (1973), Hamner and Hamner (1976), Heiman (1975), Jablonsky and Devries (1972), Kreitner (1975, 1976), Luthans and Kreitner (1973, 1974, 1975), Luthans and Lyman (1973), Luthans and Martinko (1976), McAdam (1975), Murphy (1972), Nord (1969), Schneier (1974), and Wiard (1972).

A number of studies and direct applications of OBM also
appeared in the literature during this period including; Adams (1972, 1975), Beatty and Schneier (1972), Gupton and Lebow (1971), Hermann, Demontee, Doninquez, Montes, and Hopkins (1973), Hodgson and Brenner (1968), Howell (1971), Marholin and Gray (1976), Newstrom (1976), Nord (1970), Otteman and Luthans (1975), Pierce and Risley (1974), Plax and Lacks (1976), Schroeder (1972), Sielaff (1974), Yukl and Latham (1975), Yukl, Latham and Pursell (1976), Yukl, Wexley, and Seymour (1972), and Zifferblatt (1972). Perhaps, though, the most widely publized application of OBM has been Feeney's work at Emery Air Freight (1972, 1973) in which positive reinforcement techniques were employed throughout the organization.

Despite the growing popularity of OBM, a review of the literature reveals some confusion regarding what behavior modification is and is not. This circumstance is, perhaps, due to the rather complex development of the technology in clinical psychology and education over the past 30 or so years. A brief list of definitions will help clarify the term's meaning in this study, although agreement on this issue is far from a consensus.

Operant behaviorism is essentially a theory or model of animal (including humans) behavior developed most fully by B.F. Skinner (1938, 1953, 1969). Operant concepts most widely employed in OBM to date have been positive and negative reinforcement, punishment, extinction, and reinforcement schedules. Stimulus control procedures, complex schedules of
reinforcement, and numerous other principles and procedures developed in operant laboratories have not been applied or researched in organizational settings to any significant degree. Nevertheless, the operant model, and particularly the concept of positive reinforcement, have been the theme of most of the advocacy articles cited previously.

Applied Behavior Analysis, and its laboratory counterpart, the experimental analysis of behavior, are research strategies and paradigms. Although discussed in Skinner's previously cited works, the experimental analysis was first fully described by Sidman (1960). Recently, Hersen and Barlow (1976) published a comprehensive volume on applied behavior analysis procedures which has been a basic reference for this study. Other discussions of the approach include; Baer, Wolf, and Risley (1968), Barlow and Hersen (1973), Bijou, Peterson, Harris, and Allen (1969), Campbell and Stanley (1966), Chassan (1967), Gottman (1973), Johnson and Bolstad (1973), Kazdin (1973, 1975, 1976), McNamara and McDonough (1972), and Revusky (1967).

Some of the characteristics of applied behavior analysis are: a precise objective description of behaviors and environmental variables; a demonstration of experimental control of behavior as evidence of a procedure's effectiveness; and the experimental analysis of a single subject over time as opposed to group comparison and trials. As Hersen and Barlow (1976) have pointed out, applied behavior analysis is not a required prerequisite for behavior modification but has
become identified with it because of its extensive use by researchers and practitioners in that field.

A critical deficiency in many OBM studies to date has been the conspicuous absence of a well thought out research design. Where an applied behavior analysis design has been employed, more often than not it has been a single withdrawal (A-B) design which is considered a weak demonstration of control. The need for more rigorous designs in OBM will be discussed further and is a central issue of this study.

Organizational behavior modification refers, in a loose sense, to the employment in organizations of the procedures developed in clinical and educational settings termed behavior modification. Behavior modification procedures are based generally on Skinner's operant behaviorism model and are distinguished from Pavlovian or respondent techniques often termed "behavior therapy". The technology is essentially a combination of aspects of Skinner's theoretical model and applied behavior analysis. There are numerous texts available describing these procedures in detail. Recent examples include; Craighead, Kazdin, and Mahoney (1976), Karen (1974), Reese, Howard, and Reese (1978), and Sherman (1973).

The technology consists of a series of rather well-defined steps described tersely by Gambrill, Thomas, and Carter (1971). They list 12 steps necessary to the conduct of a behavior modification program. An inventory of problem areas, problem selection and contract, commitment to
cooperate, specification of target behaviors, baseline, identification of probable controlling conditions, assessment of environmental resources, specification of behavioral objectives, formulation of a modification plan, implementation of the plan, monitoring outcomes, and maintenance of change. These steps, and their utility in OBM, will be discussed further.

Operant behaviorism, applied behavior analysis, and behavior modification, though distinct in their objectives and prescriptions, are often grouped as a common technology. Perhaps this is a useful association, but not a compulsory one. Operant behaviorism need not be the only basic science from which OBM draws its principles nor applied behavior analysis the required research strategy. Similarly, operant behaviorism principles may have utility for other technologies and applied behavior analysis a valuable addition to the research of non-operant psychologists. For example, Wundt, Ebbinghaus, Pavlov, and Freud all used variations of the single subject design in their studies. The question for OBM practitioners and managers would appear to be not whether to accept everything these paradigms offer, but rather which principles and procedures have the most utility for developing a long needed technology of management. The remainder of this section will explore this issue.
The analysis and modification of observable employee behaviors through the manipulation of the work environment is not a new idea in industrial and organizational psychology. This was the approach of the earliest systematic effort to discover and define effective management practices termed "Scientific Management" by Frederick Taylor (1911). Many of Taylor's procedures bear a strong resemblance to those advocated by current practitioners of organizational behavior modification.

Taylor's "time studies" required direct observation of job behaviors and an analysis of sequences of behavior akin to the "behavior chains" in operant psychology. His concept of "task management" in which, at the beginning of each day, workers were given written instructions and time allowances for the day's work is not too dissimilar from the behavioral objectives employed in OBM today. Taylor also rejected the "profit sharing" incentive plan in vogue in his day because he thought the "remoteness of reward" and absence of personal incentive in this system were counterproductive. Taylor's concern with delay of reinforcement and contingent reinforcement at the turn of the century testify to his remarkable insightfulness as an applied researcher.

The decline in influence of scientific management was
not due to a lack of success in attempting to increase production. Taylor's experiments at Bethlehem Steel Company made significant progress in this regard (Taylor, 1911, pp. 57-76). Luthans (1977, p.11) cites three contributing factors to the decline in Taylor's influence including the Great Depression, the labor movement, and the results of the Hawthorne studies. These, and other factors, shifted the attention of management and organizational researchers toward questions concerning employee relations and attitudes and away from Taylor's concern with wages, the work setting, and job behaviors. In short, an employee's attitudes and feelings replaced his performance as the dependent variable in industrial psychological research.

Research where attitudes or other cognitive processes have served as dependent variables has produced a valuable literature over the past fifty years but has not been without its drawbacks. For example, the complex relationship between paper-and-pencil assessments of job satisfaction and performance is now well documented (Vroom, 1964).

Concurrent with the growth in popularity of attitudes as dependent variables has been a similar interest in internal processes as intervening or independent variables. Howell (1976, p.38) states: "Most of the current theorizing in the area of work motivation and satisfaction relies heavily on cognitive concepts and explanations.... Since the 1940's and 1950's when radical behaviorism was in vogue, the whole field of psychology has been moving steadily in a
cognitive direction."

In addition to the trend toward cognitive formulations of organizational behavior there has been a general acceptance of a research strategy termed the "nomothetic" approach by Allport (1962). Hypotheses are formulated as to the anticipated effect of an experimental manipulation and then tested by differential exposure of groups of subjects to the independent variable. Statistical tests of significance are then often employed to assess significant differences between groups. Also prevalent are naturalistic correlational studies of groups of subjects in which existing interrelationships are examined without the direct experimental manipulation of relevant variables.

The present view characterizes industrial and organizational research regarding employee performance as a search for cognitive variables that affect performance. This search is typically conducted through experimental or correlational group comparisons.

Whether these characteristics are necessary for the progress of a science of organizational behavior is an open question not addressed here. What is argued is that an emphasis on group-comparisons of cognitive variables is injurious to the development of a technology of management. A science is distinct from a technology in both its objectives and resources. A science is concerned with principles that have broad generality across settings and subjects. Principles that hold true for only one group of employees in
one setting are of limited value. In contrast, a technology must provide immediate, workable solutions to specific situations and employees.

Another distinction between science and technology is discussed by Baer et.al. (1968, p.92) and concerns the variables investigated. Scientists are free to select any behavior or environmental variable to test a particular hypothesis. The technologist, however, is constrained to work with organizational variables that are readily accessible and employee performances of significance to the organization.

Similarly, Hersen and Barlow (1976, pp. 21-22) discuss at length what they term the "scientist-practitioner split" in regard to criteria for judging the significance of data in applied settings. They argue, as do others (Bergin and Strupp, 1972, p.440), that statistical significance in group-comparisons may relate to effects so weak they have little practical significance. The effects sought by the technologist should be powerful enough to be of direct organizational benefit and should therefore be demonstrable through simple inspection of the data or descriptive statistics.

The group-comparison method requires large samples, assignment to groups, and other procedures that are too unwieldy for the working technologist whose chief concern is often the increased production of only a few employees. Massive correlational or experimental studies are simply unrealistic as tools for the organizational technologist.
The problems in applying the results of group-comparisons data to the prediction and control of a single individual's performance have been described by Sidman (1960). Basically, the thrust of this argument is that an average derived from a number of subjects may not, in fact, describe accurately the performance of a particular subject. Since the single case is often the chief concern of the technologist, this deficiency is especially of concern.

Ronan, in his exhaustive study of job satisfaction, concluded:

Last it would appear that it will be necessary to study individuals rather than anonymous groups. There have been relatively few such studies mostly concerned with personality variables....It is submitted that only studies of individuals behaving in organizations are adequate for the problems involved. (Ronan, 1970, p.28)

The traditional methodologies of industrial and organizational psychology have proven beneficial in the quest for scientific knowledge but are considered here inappropriate for a management technology which by nature focuses on specific situations and employees, investigates relationships as dictated by organizational need rather than those of science, requires practical rather than statistical demonstrations of an effect, is constrained by time and resources to procedures other than group-comparisons, and is often more concerned with the prediction of the single case than a group
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average.

One unfortunate consequence of the "scientist-practitioner split" has been a frequent disregard by practitioners of basic research findings or methodology. Mason Haire describes this situation in stating:

When I say the contribution of the behavioral sciences to management has been disappointingly small, I mean this: in the past 15 years there have been perhaps 150 books and 1,500 articles written on the subject. And yet the practice of management remains almost the same. (Haire, 1967, p.110)

Despite Haire's criticism, and the difficulties associated with the "split", there is ample evidence that managers want a technology upon which to base their practice. For example, Rush and Wikstrom (1969) surveyed 302 industries and found 80% of the respondents reporting an interest in the behavioral sciences. Seventy-three percent currently employed behavioral scientists as consultants. The question is, then, what methodology is best suited to the development of such a technology?

A Potential Management Technology

The candidate proposed here for a management technology will follow precedent and be called organizational behavior
modification (OBM). The term, however, will refer specifically to a technology that includes the following strategies:

1. **objective specification of dependent variables as observable behaviors or behavior products, and specification of independent variables as manipulable environmental contingencies**;
2. **a basic adherence to Skinner's operant model in analyzing organizational contingencies**;
3. **a general reliance on applied behavior analysis as a strategy for monitoring and assessing the effects of managerial interventions**.

The training of members of an organization in these strategies could be achieved through several alternative methods. One approach (Luthans and Lyman, 1973) has been to train first-level supervisors in OBM techniques and charge them with the responsibility for its implementation in the organization. The author's experiences with this approach lead him to find this a less than acceptable alternative. Without support from upper management, which requires some familiarity with OBM, supervisors often are rather uninformed as to what performance modifications are of importance to the organization and may lack the authority to make the environmental manipulations necessary to bring about a performance change. Further, OBM procedures are time consuming and a failure on the part of upper management to assist in the implementation and reinforce successful interventions will usually impede the progress of future efforts.

Another approach to installing OBM in an organization is to provide extensive on-the-job training to a current
employee who will then serve as an in-house OBM consultant to the organization. This technique has been employed frequently by Behavioral Systems Inc. (Miller, 1977) and is reportedly successful.

The training approach in the study to follow, however, was to instruct key upper management personnel as a group followed by individual instruction and consultation. It was hoped this strategy would overcome some of the obstacles mentioned previously by: 1. insuring that target performances specified for intervention are of importance to the department; 2. select individuals with the authority to make required environmental changes; 3. insuring upper management throughout the organization is familiar with the OBM approach; 4. instructing participating managers in the necessity for reinforcing supervisors who administer OBM projects; and 5. selecting a training participant who demonstrates exceptional interest and skill as the organization's future in-house consultant. The following is a summary of the technology presented in the program listed in the sequence usually employed in developing an OBM intervention.

**Specification of organizational objectives** - The first phase of an OBM intervention is essentially a modification of Drucker's (1954) *Management by Objectives* system as discussed by Humble (1970). The importance of these objectives to an OBM program involves several concerns including: insuring employee objectives are written in concert with the broader objectives of each department as a whole; insuring
the necessary organizational resources are available to the OBM analyst; insuring that successful performance changes are maintained after an intervention; and to prevent resource allocations to interventions of minimal importance to the detriment of other importance performance contingencies.

**Development of performance based job descriptions** - The second phase is to identify all employee performances critical to an achievement of each departmental objective.

Performance based job descriptions would differ in function from traditional job descriptions. Little attention would be given the traditional concerns of salary administration, performance appraisal, employee selection, or advancement in the institutional sense. Rather, the function of the descriptions for OBM would be to provide a listing of employee performance objectives that would serve as a basis for identifying performance deficiencies that hinder the achievement of departmental objectives. However, a by-product of developing such a list would be a listing of critical performances that might be useful for other purposes such as appraisal and selection validation.

**Administration of performance cost-benefit analysis** - In the third phase of the OBM program managers identify each departmental objective that is not currently being met. Then those performances critical to the achievement of each objective are identified. Finally, employees or positions in which these critical performances should occur are also identified specifying whose performance is substandard, the
probable nature of the performance problem, and the estimated resource cost of correcting the deficiency. The difference (preferably in terms of dollars) between estimated organizational benefits to be gained from correcting the deficiency and the cost of the intervention would provide an index that would allow the analyst to select for intervention only performance deficiencies that, if corrected, would most benefit the organization.

The cost-benefit techniques employed in this study were derived from systems described by Mager and Pipe (1970) Rummler (1973), and Krapfl (1974).

**Design and implementation of the analysis plan** - In the fourth phase an applied behavior analysis plan is developed. This would include specification of a target behavior for analysis, designing a baseline, selecting an appropriate experimental design, selecting observing and recording techniques, determining observer validity and reliability checks, and a procedure for current contingency analysis such as the "behavior log".

This phase is one of the more important because an incomplete or inaccurate behavioral analysis may result in a failure to determine the nature of the problem, for example training or contingency. Secondly, an inaccurate estimate of baseline performance level, trend, or variability may lead to unnecessary or inappropriate interventions or result in a failure to shift procedures during intervention due to a lack of comparative data from which to examine the effect an
intervention has on performance. Finally, a poorly designed or executed analysis would fail to convincingly demonstrate the effectiveness of an intervention and therefore limit its generality to future applications.

The necessity for applied behavior analysis procedures has not been recognized by many OBM practitioners. The alternative has been to discuss with supervisors and employees the potential causes of a performance deficiency in their opinion and to develop interventions logically rather than from empirical observation and manipulation of the contingencies. The latter approach has been described by Skinner as: "When effects on behavior can be immediately observed, it is most efficient to explore relevant variables by manipulating them in an improvised and rapidly changing design" (Skinner, 1966, p.21). Where relevant variables are obvious, interviews and casual observation may be sufficient, but where they are obscure an analysis is required.

Selection and implementation of an intervention - This phase involves techniques for analyzing baseline data and a knowledge of the various procedures available for modifying performance. Key concerns could be whether training or contingency modification were necessary, the current form and frequency of the performance, current contingencies that, if modified, might enhance performance, possible incompatible behaviors presently occurring and retarding performance, insufficient stimulus control, and others.

Termination of intervention - In this final phase of an
intervention decisions must be made concerning the effectiveness of the intervention, whether to continue intervention or modify it, and a determination of methods to insure performance generalization and maintenance when the intervention is terminated.

**Issues and Concerns in the Organizational Application of Behavior Modification**

A number of concerns have been raised regarding the direction in which the fledgling management technology of organizational behavior modification is headed. It has been noted that advocates and practitioners of OBM often appear to have a rather superficial understanding of the operant model they support. Mawhinney (1975) has pointed out a number of instances in which basic operant concepts have been misstated or misapplied in the organizational psychology literature. Because the Operant model is the basis of both contingency analysis and behavior modification, a fundamental question regarding the potential usefulness of OBM as a management technology is whether practicing managers can be efficiently taught the basic principles of the model and can apply them in their work.

A second fundamental issue concerns the utility of applied behavior analysis in a management technology. Historically, a unique feature of behavior modification in clinical and educational settings has been that each case
study was, in effect, an experiment. The result of the inclusion of single subject experimental designs in many behavior modification interventions has been the gradual emergence of clinical and educational technologies that rely on demonstrations of experimental control as evidence of a procedure's effectiveness. Consequently, each practitioner may contribute to the generalization of his experimental colleagues' laboratory findings, or may provide evidence that laboratory principles must be reinterpreted. This mutual exchange between science and technology has proven worthwhile in the "physical" sciences and should benefit the behavioral sciences as well.

A related value of including applied behavior analysis in OBM is the immediate benefits derived by practitioners in assessing the effectiveness of their own management interventions and those of others. An understanding of applied behavior analysis should assist managers in decisions as to whether to adopt a new procedure or continue an existing one.

Unfortunately, it appears OBM practitioners are often failing to follow the lead of behavior modification in clinics and education. Rarely do organizational publications stress, or even describe, applied behavior analysis. A reliance on persuasive journalism, anecdotal reports, non-experimental designs, or simple A-B withdrawal designs has been the norm for OBM publication to date. The study to follow will explore whether applied behavior analysis can efficiently be taught
to practicing managers and whether they can properly apply the analysis and use it for assessing the effectiveness of interventions they attempt.

At a more specific level of inquiry, there are questions concerning the practical utility of the six phase OBM program proposed by the author. Are organizational objectives important to the selection of performance objectives and can they be developed by managers in a relatively short period of time? Similarly, is the cost-benefit analysis outlined in the training program useful to managers in selecting performance objectives? Can the specific techniques of applied behavior analysis such as target behavior specification, baselining, applied designs, observation techniques and observer validity and reliability checks be employed in the traditional fashion, or do new problems arise in organizations that may require new techniques? Also, these techniques have been successfully taught to mental health and educational professionals in relatively brief workshops. Is this approach possible with practicing managers and will such training provide sufficient instruction to allow them to correctly apply the techniques in managing employee performance?

Because OBM is in its infancy, and what literature is available often has failed to address the above questions, it was determined the most effective strategy for initially exploring these issues was to conduct a workshop and have each participating manager attempt an OBM intervention with as
little "expert" consultation as possible. Through a survey, an examination of how each case study was conducted and its results, and interviews with each manager prior to his study and after its completion, the author hoped to discover which aspects of OBM were difficult for the managers to understand or later employ, and which principles and procedures seemed useful to them in their profession. This latter question would appear critical to the success of OBM in a management technology. If managers do not find contingency analysis, behavior modification, and applied behavior analysis "face valid" and useful in day-to-day decision making, they will not utilize them in their work. A rejection of these principles and procedures would, of course, result in OBM being "put on the shelf" along with other approaches and prevent further exploration and development of the previously advocated management technology.

For these reasons, the author was especially concerned, in this exploratory study, with the practical difficulties the managers encountered and their individual opinions of the various principles and procedures. To give the technology a fair hearing, it was decided that as many research encumbrances as possible be eliminated from the study so that each case study would simulate, as closely as possible, an actual application of the technology. Hopefully, this approach would present the technology not as a series of experiments in which the managers were passive subjects, but
rather as a practical alternative to their traditional management styles. If these managers did accept the program as useful and could apply the principles themselves, it would suggest OBM has potential as a working management technology for modifying employee performance. Questions raised in this process could then be individually assessed more rigorously in future studies. Perhaps some of the questions arising from the case studies would be investigated by the managers themselves.
II. AN ORGANIZATIONAL BEHAVIOR MODIFICATION TRAINING PROGRAM

Description of the Organization

The program and case studies were conducted in a medium sized southwestern commercial bank in the 200 to 400 million dollar deposit category. The bank ownership and management changed in 1970 and over the past seven years has experienced continuous growth. In the past several years the bank has become more of a consumer oriented organization.

The reorientation toward consumer banking has been accomplished through expanding services to include 12 full-service branch banks across the city it serves.

To obtain new businesses and enhance relations with existing businesses an "officer call program" in which all bank officers phone a prescribed number of customers was implemented. Additionally, a great deal of their effort had been recently directed at broadening the bank's market share of consumer installment loans. Finally, the bank had just entered the electronic funds transfer field with "automatic tellers" for credit and debit cards.
All of these activities were reflected to some extent in the OBM case studies to follow.

During the study the bank had 390 full-time employees and 35 part-time. The eleven major divisions in the bank's organizational structure were real estate, personnel, auditing, money market, marketing, corporate, loans, retail banking, automated services, operations, and trust. Six of these divisions were represented in the study in addition to the participation of the executive vice-president.

**Program Participants**

Twelve bank officers participated in the study. The following lists the departments they supervised, number of employees, and, where necessary, a brief description of the department's function.

Accounts services, 26 employees, customer information and accounts corrections; Branch banking, 71 employees, all branch banking operations; Data processing, 71 employees, all data processing operations; Retail banking, 118 employees, includes installment lending and teller operation among others; Credit and installment loans, 23 employees; Marketing, 11 employees but indirectly all officers through administration of "officer call program" and other similar programs; Proof, 23 employees, verifying accuracy of
transactions; Commercial loans, 14 employees; Operations, 40 employees, various functions such as building, mail, accounts services, etc.; Personnel, 11 employees but indirectly all bank employees (both director and assistant participated); Executive Vice-President, each of the above division officers. This individual initiated the OBM training program and selected the participants.

Training Program Instruction

The training program was conducted Monday through Friday for two weeks. Ten sessions were held from 3:00 P.M. to 5:00 P.M. each afternoon and two additional informal sessions were held in the evenings. Individual consultations occurred throughout the two weeks and especially the last two days when projects were finalized.

Following the training program some additional consultations with the author were conducted by phone or mail. Four months after the program all projects but one had been completed and the results of each case were discussed over a period of three days and collected by the author for further analysis.

Each participant received a copy of "A Manual and Workbook for Organizational Behavior Modification" written by the author for the training program. The manual numbered
200 pages and included 20 in-class exercises in OBM procedures, brief descriptions of various concepts and procedures, diagrammatic descriptions of procedures, reference lists, a glossary of terms, and a list of training objectives. (A revision of the manual is currently in progress.)

In addition to the manual the film Who did What to Whom (Mager, 1972) was employed as part of the instruction in organizational contingency analysis and an audio tape of sequenced tones developed by the author was used in demonstrating and practicing behavioral observation, recording, and validation.

Training Program Evaluation Survey

During the period when the author made his final consultations a survey was administered to each participant asking him to rate on a five point scale his difficulty in understanding each of the 71 concepts or procedures taught in the program. Also, each participant was asked to similarly rate his estimate of each item's practical utility in analyzing and solving employee performance problems on a day-to-day basis (see appendix 1 for copy of the survey).

Eight of the twelve participants completed the survey. The rating instructions for "topic complexity or difficulty" are listed below.
"Compared to the other topics in the workshop I found this one:

5= very difficult to understand...
4= above average difficulty...
3= average difficulty...
2= less than average difficulty...
1= little difficulty..."

The rating instructions for a topic’s practical usefulness are described below.

"Compared to other concepts and techniques I have been taught in other workshops/college, etc., on how to motivate employees and specify performance goals I found this topic:

5= One that will have considerable use...
4= One that will have a good deal of use...
3= One that will have some use...
2= One that will have little use...
1= One that will have no use..."

Table 1 lists the 12 topics rated most useful with their corresponding mean usefulness and difficulty ratings. Table 2 lists 12 topics rated least useful and their mean usefulness and difficulty ratings.
Table 1  Evaluation Survey Results

<table>
<thead>
<tr>
<th>mean utility</th>
<th>mean utility</th>
<th>topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>rating 4.4</td>
<td>rating 3.3</td>
<td>performance based job descriptions</td>
</tr>
<tr>
<td>rating 4.1</td>
<td>rating 1.3</td>
<td>departmental objectives</td>
</tr>
<tr>
<td>rating 4.1</td>
<td>rating 3.3</td>
<td>positive and negative reinforcement methods</td>
</tr>
<tr>
<td>rating 4.1</td>
<td>rating 3.4</td>
<td>employee performance objectives</td>
</tr>
<tr>
<td>rating 4.0</td>
<td>rating 3.0</td>
<td>specific org. objectives and key results</td>
</tr>
<tr>
<td>rating 3.9</td>
<td>rating 3.0</td>
<td>extinction procedure</td>
</tr>
<tr>
<td>rating 3.9</td>
<td>rating 3.0</td>
<td>training v.s. contingency problems</td>
</tr>
<tr>
<td>rating 3.9</td>
<td>rating 3.9</td>
<td>positive punishment procedure</td>
</tr>
<tr>
<td>rating 3.7</td>
<td>rating 3.1</td>
<td>baseline trend analysis</td>
</tr>
<tr>
<td>rating 3.7</td>
<td>rating 3.3</td>
<td>six applied behavior analysis designs</td>
</tr>
<tr>
<td>rating 3.7</td>
<td>rating 3.6</td>
<td>baseline level analysis</td>
</tr>
</tbody>
</table>
Table 2  Evaluation Survey Results

Twelve topics rated least useful in practice of management

<table>
<thead>
<tr>
<th>utility rating</th>
<th>mean</th>
<th>diff.</th>
<th>rating</th>
<th>mean</th>
<th>topic</th>
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<tbody>
<tr>
<td>2.9</td>
<td>2.6</td>
<td></td>
<td>2.9</td>
<td>2.7</td>
<td>concept of &quot;generality of findings&quot;</td>
</tr>
<tr>
<td>2.9</td>
<td>2.7</td>
<td></td>
<td>2.9</td>
<td>2.9</td>
<td>behavior log procedure</td>
</tr>
<tr>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td>2.8</td>
<td>3.5</td>
<td>role playing procedure</td>
</tr>
<tr>
<td>2.8</td>
<td>3.5</td>
<td></td>
<td>2.7</td>
<td>3.0</td>
<td>situational v.s. universal mgt. theories</td>
</tr>
<tr>
<td>2.7</td>
<td>3.0</td>
<td></td>
<td>2.7</td>
<td>3.0</td>
<td>reinforcement schedules</td>
</tr>
<tr>
<td>2.7</td>
<td>3.0</td>
<td></td>
<td>2.7</td>
<td>2.6</td>
<td>reinforcement menus and sampling</td>
</tr>
<tr>
<td>2.7</td>
<td>2.6</td>
<td></td>
<td>2.7</td>
<td>2.6</td>
<td>trd. research design v.s. app. beh. analysis</td>
</tr>
<tr>
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<td>3.0</td>
<td></td>
<td>2.6</td>
<td>3.4</td>
<td>reinforcement survey technique</td>
</tr>
<tr>
<td>2.6</td>
<td>3.4</td>
<td></td>
<td>2.6</td>
<td>3.4</td>
<td>observer validation techniques</td>
</tr>
<tr>
<td>2.6</td>
<td>3.4</td>
<td></td>
<td>2.6</td>
<td>3.4</td>
<td>observer reliability techniques</td>
</tr>
<tr>
<td>2.6</td>
<td>3.4</td>
<td></td>
<td>2.6</td>
<td>3.4</td>
<td>methods for setting baseline length</td>
</tr>
<tr>
<td>2.6</td>
<td>3.4</td>
<td></td>
<td>2.6</td>
<td>3.4</td>
<td>3 principles of scientific thinking</td>
</tr>
</tbody>
</table>

Discussion of Evaluation Survey Results

Due to the small number of raters and an apparent "central tendency" error across several of the raters, only tentative statements may be made regarding the perceived utility of the various OBM concepts and procedures taught in
the program. Of the five items rated as most useful, four of them concerned the specification of performance objectives at various organizational levels. This would indicate that objective specification of performance goals is a viable aspect of OBM programs, in the officer's opinions, and would recommend stress be placed on the skills required in writing behavioral objectives at all levels where performance is a key determinant in reaching goals. Perhaps some amalgamation of the management by objectives approach, OBM behavior specification techniques, and job analysis techniques (e.g. Fine and Wiley, 1971) would be desirable.

In the 3rd, 6th, and 9th ranks operant concepts or procedures were rated as most useful. This would suggest that the operant model in contingency analysis may indeed have some merit.

Despite the fact that insufficient time was allotted in the training program to adequately cover performance cost-benefit analysis, the approach was still rated as the 8th most useful procedure out of 71 items. This indicates the analysis deserves consideration in future programs.

Finally, the author was pleased to find baseline trend and level analysis and applied behavior analysis designs included in the list of most useful procedures. The value of these procedures will be further substantiated in the case studies to follow.

Regarding items rated least useful, ranks 6, 9 and 12
all concerned rather academic issues related to research design or management theory. Their lack of direct application, and the time required to present them adequately, suggest they are probably inappropriate for this sort of training program.

Unfortunately, items 2, 3, 4, and 11 were all applied behavior analysis procedures of general importance in clinical and educational behavior modification and yet were rated as least useful. No explanation for the poor rating received by baseline length determination procedures has occurred to the author since baselines were rated as a "most useful" procedure. The perceived lack of utility of observer validity and reliability checks may be due to an absence of direct behavior observation in all but one of the case studies. That is, few of the actual applications in the study necessitated these procedures use since behavior products were observed instead of behaviors.

Similarly, ranks 5, 7, and 8 all referred to the identification and delivery of reinforcers. Most of the studies, however, employed rearranging stimulus control or existing consequences, or simple "feedback" procedures and the need for these procedures may not have been apparent.

Finally, no training procedures were employed or discussed in any detail which may account for the poor rating received by role play or behavioral rehearsal. Whether line managers should be instructed in training procedures is still an open question. The frequent use of on-the-job
training, particularly in the teller area, suggest that for some supervisors such training could be beneficial.

Generally, the author was left cautiously optimistic about the potential roles of behavioral specification, contingency analysis, and applied behavior analysis in organizational management. The survey suggested that the participants at least understood the viewpoint expressed throughout the program. Of course, the more important questions were whether they could successfully apply the principles and procedures and would they be effective in modifying performance deficiencies. The following case studies address these issues.
III. OBM CASE STUDIES

Development of Departmental Objectives and Employee Performance Objectives

During the first week of the training program several in-class exercises were performed to assist in developing general organizational objectives. Each participant was asked to write a number of general organizational objectives that he thought would reflect the goals of the organization for the coming year and could be used to guide overall organizational activities.

Duplicate objectives were removed and a list of 29 general organizational objectives was prepared by the author from all those submitted. These objectives were then discussed in three small groups of participants and rated by each group as to their relative importance to the organization. Additionally, the President and Vice-President of the bank rated the objectives in terms of their importance. These ratings were averaged and a list of ten organizational objectives was derived and distributed to all participants.
Listed below in rank order are the 10 general organizational objectives developed in the training program:

1. To expand the sales program.
2. To improve the bank's image in the community.
3. To increase net income and stock holder's return.
4. To become more of an "individual's" bank.
5. To increase the market share of credit cards.
6. To increase bank profits.
7. To increase the number of services used by customers.
8. To expand the bank's market share of available customers.
9. To increase total deposits.
10. To decrease operating expenses.

Clearly, five days was not enough time to develop useful objectives for the organization. Several of the objectives overlapped or were too general to be of much value. Nevertheless, the process did prove helpful in the participant's selection of a general problem area and in writing their departmental objectives.

Using the list above, each participant wrote one or two departmental objectives for his division. The departmental objectives were to be designed to achieve one or more of the organizational objectives.

The critical employee performances necessary to the achievement of each departmental objective were identified next. Current job descriptions and discussions with supervisors were used to facilitate this procedure.
Deficient performances were then identified and a cost-benefit analysis was conducted for each deficient performance. The results were presented by each participant to the class. The deficient performances estimated as most important to the achievement of the departmental objective, and estimated as costing the least to correct, were selected for analysis and intervention.

The above process was used to determine each of the performance objectives in the following case studies.

**Case One**

**Department:** Retail Banking  
**General Organizational Objective:** To expand the sales program.  
**Departmental Objective:** To increase the sale of "credit life" insurance on installment loan notes.  
**Employees:** Eleven branch managers and three main bank loan officers.  
**Performance Objective:** To sell credit life to 90% of all installment loan customers.  
**Procedure:**  
*Problem analysis* - The possible causes of the deficiency were discussed with the officer and, due to the experience
of the managers, an inability to perform the necessary paperwork, calculations, and so forth was ruled out.

The problem was estimated to be due to faulty contingencies rather than a lack of formal training. First, there was no evident reinforcer contingent on the sale of credit life. Secondly, despite instruction in proper techniques for selling insurance on loan notes, it was the opinion of the officer that there were insufficient cues to guide the managers and officers through the sales sequence on a daily basis. The participant officer's 25 years of banking experience was invaluable in specifying the components of a correct sales performance chain.

Three steps were finally arrived at that would potentially increase the sales. When husband and wife co-signed a note it was important that both be present for the signing session. The rationale for having both present was that often the wife, if dependent on the husband's income, was more concerned with payment of the note in the event of the husband's death. If the husband signed alone the chances of selling the insurance would be diminished to some extent. With the wife present the opportunity for a sale was considerably improved.

The second step was that during the signing session the purposes of the insurance should be explained to the wife more so than the husband since she would be the beneficiary.
Finally, the note should be prepared in advance with credit life included. This step was not intended to deceive the customer since state law required an explanation of the insurance and the customer's signature confirming an understanding of its benefits and costs. It was thought that many customers failed to purchase insurance because of the time involved in rewriting a note that didn't include it. Of course, a delay would occur in this procedure if the customer elected not to purchase. Resolution of the ethical considerations would have to include an estimate of the benefits of the insurance to the customer and organization. Though a question of considerable importance, especially in sales and marketing, the ethics of these procedures is not discussed in this study.

In summary, an informal observational analysis and the officer's experience were the chief bases for the design of the intervention.

**Intervention** - At the conclusion of the baseline period all the subjects were called in for a meeting in which they were given copies of their baseline performance charts. They were then instructed to individually chart similar graphs for the next six weeks. The sales sequence and data collection procedures to be described were also explained.

A simple "feedback procedure was used as a reinforcer for the desired performance. It was hoped that improvements shown on the charts would serve to increase sales.
The stimulus control procedures were somewhat more complex. "Cue sheets" were distributed to each subject listing four components of a proper sales sequence. The second step, "If husband at your desk by himself call wife to sell her" was dropped after the first few days of intervention as it was considered unpleasant and unnecessary.

A series of numbers, 1 - 30, followed each component descriptor. The three remaining components of a proper sales approach were those described in the "analysis" section. The subjects were instructed to circle progressively the numbers following each component they employed. In this manner a weekly cumulative record was maintained for the frequency of each sales component's occurrence. These records were submitted to the officer at the end of each week.

A second technique for insuring the notes were prepared in advance with credit life included was to require each subject to submit a voided note with credit life included for each note sold without the insurance.

In effect, negative reinforcement procedures were utilized to insure the components occurred. In the first week of intervention two instances occurred where tallys or voided contracts failed to agree with the printouts and resulted in mild reprimands from the officer. It is not unreasonable to assume this contingency produced some avoidance behavior on the part of other subjects and had
a similar effect on their performances.

Results and Discussion

Figures 1 through 4 are the results of the project. The charts are presented in an order based on the experience of the manager from least to most experience.

Table 3 below summarizes the descriptive statistics for each case in baseline and intervention.

Table 3
Means, Trends, and Std. Deviations
of Percent Loans Sold With Insurance
for Managers and Loan Officers

<table>
<thead>
<tr>
<th>Case</th>
<th>Baseline</th>
<th></th>
<th></th>
<th>Intervention</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>casel</td>
<td>mean</td>
<td>trend</td>
<td>std. dev.</td>
<td>mean</td>
<td>trend</td>
<td>std. dev.</td>
</tr>
<tr>
<td>1</td>
<td>66.3%</td>
<td>6.0</td>
<td>41.4</td>
<td>93.5%</td>
<td>3.6</td>
<td>7.3</td>
</tr>
<tr>
<td>2</td>
<td>56.2%</td>
<td>9.0</td>
<td>27.5</td>
<td>72.7%</td>
<td>4.5</td>
<td>22.8</td>
</tr>
<tr>
<td>3</td>
<td>48.7%</td>
<td>-3.5</td>
<td>14.4</td>
<td>68.5%</td>
<td>4.7</td>
<td>17.4</td>
</tr>
<tr>
<td>4</td>
<td>46.3%</td>
<td>-4.5</td>
<td>24.5</td>
<td>69.0%</td>
<td>4.5</td>
<td>19.0</td>
</tr>
<tr>
<td>5</td>
<td>100.0%</td>
<td>0.0</td>
<td>0.0</td>
<td>83.3%</td>
<td>14.3</td>
<td>40.8</td>
</tr>
<tr>
<td>6</td>
<td>88.8%</td>
<td>1.4</td>
<td>12.6</td>
<td>79.0%</td>
<td>1.7</td>
<td>19.6</td>
</tr>
<tr>
<td>7</td>
<td>45.8%</td>
<td>3.1</td>
<td>28.7</td>
<td>73.0%</td>
<td>-2.4</td>
<td>38.0</td>
</tr>
<tr>
<td>8</td>
<td>35.7%</td>
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<td>23.2</td>
<td>66.5%</td>
<td>5.2</td>
<td>16.3</td>
</tr>
<tr>
<td>9</td>
<td>64.0%</td>
<td>-6.3</td>
<td>21.6</td>
<td>79.8%</td>
<td>1.5</td>
<td>26.9</td>
</tr>
<tr>
<td>10</td>
<td>61.7%</td>
<td>12.7</td>
<td>33.1</td>
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<td>8.0</td>
</tr>
<tr>
<td>11</td>
<td>66.0%</td>
<td>9.1</td>
<td>37.7</td>
<td>81.2%</td>
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<td>20.7</td>
</tr>
<tr>
<td>12-14</td>
<td>56.8%</td>
<td>.1</td>
<td>7.0</td>
<td>65.0%</td>
<td>.5</td>
<td>8.7</td>
</tr>
<tr>
<td>all</td>
<td>61.2%</td>
<td>2.1</td>
<td>8.5</td>
<td>76.0%</td>
<td>3.1</td>
<td>8.6</td>
</tr>
</tbody>
</table>
Sub. 1 (8 mo. as branch manager, 1 1/2 yr. bank exper.)

Sub. 2 (8 mo. as branch manager, 6 years bank exper.)

Sub. 3 (10 mo. as branch manager, 3 years bank exper.)

Fig. 1 Percent Notes with Insurance for 3 Branch Managers
Fig. 2 Percent Notes with Insurance for 3 Branch Managers
Graphs showing the percent notes with insurance for 3 branch managers:

- **Sub. 7**: 12 mo. as branch manager, 7 years bank exper.
- **Sub. 8**: 12 mo. as branch manager, 6 years bank exper.
- **Sub. 9**: 2 yrs. as branch manager, 3 years bank exper.

Fig. 3 Percent Notes with Insurance for 3 Branch Managers
Fig. 4 Percent Insured Notes for 2 Managers and 3 Officers
Inspection of the individual records suggests the intervention had a wide variety of effects. In cases five and six the baseline performance was at or near the performance objective and no intervention should have been attempted. Of the remaining ten cases (12-14 were averaged), there was an increase in percent loans sold with insurance for all cases with an average increase of 14.8%.

The trend was accelerated in half the cases but decelerated in the remainder of the cases. Variability decreased in six of the ten cases but increased in the other cases. The intervention was considered successful with respect to organizational profits realized. The average mean increase of 14.8% yielded a profit of $5800 for the six week intervention and a projected annual profit, if maintained, of $46,404.

Technical interpretation of the data, however, is less encouraging. First, the introduction of the intervention in each branch was conducted simultaneously rather than in the usual staggered fashion. Consequently, any changes in city-wide market conditions, weather, holidays, or general bank policies may have confounded the results.

Secondly, there was considerable variability in most of the cases in both phases. Despite the mean increases, the performance variability and deceleration of trend in half the cases prevent any firm conclusions regarding the effectiveness of the intervention.
Finally, the fact the baseline was conducted covertly confuses any interpretation of the effects of the cue sheets and feedback because supervisory observation was introduced simultaneously with these procedures. This confounding error occurred in several of the cases and will be examined in the general discussion section.

Case Two

Department: Account Services

General Organizational Objective: To improve the bank's image in the community

Departmental Objective: To answer inquiries and complaints to the customer's satisfaction

Employee: Telephone Operator. Selected because she was the most recently hired. Ten months experience.
**Performance Objective:** To respond to customer inquiries or complaints such that 90% of all calls result in an absence of negative customer responses as judged by the operator.

**Procedure:**

**Baseline and Design** - It was the officer's opinion that there were a number of uncontrollable environmental variables that might affect the subject's performance. From his experience in the field certain cyclic patterns were thought to influence the level and frequency of complaints and inquiries such as time of the month, day, or week. Somewhat more random factors that might also modify performance included data processing equipment failures, teller and loan officer errors, and the presence or absence of the other four operators.

Due to this concern for environmental variability, and a limited amount of time, an A-B withdrawal design with an extended baseline was selected. It was hoped the extended baseline would detect variability, especially nonrandom variability, in order to insure an accurate interpretation of the intervention data. The baseline for this study was seven work weeks followed by a slightly less than five week intervention for a total study duration of about 12 weeks.

The target behavior observation was achieved by requiring the subject to tape record all customer inquiries.
she received each day. She was informed in the beginning that these tapes would be monitored by the officer but was not informed of the study itself. The officer selected a 30 minute segment of the morning recordings to listen to each day and counted the total number of conversations that occurred without any negative customer statements. Negative statements included any statements indicating the customer was displeased, angered, or rejected the subject's information. A validity check was performed by having the supervisor and officer listen independently to tape segments prior to baseline and establish observer agreement. Similarly, occasional informal reliability checks occurred throughout the project. Unfortunately, no record was kept by the officer of either validity or reliability percentage agreements, however the officer's four years of experience may have assisted in limiting observer "drift".

A regrettable misunderstanding concerning both the sampling of the calls and the method of recording limit its validity. Rather than random sampling of the tapes, the officer listened to the same period each day. At least the procedure was consistent through phases, though lacking in generality across the entire day.

Secondly, the officer charted the absolute number of positive conversations in the 30 minute samples rather than a percentage. This deficiency may be somewhat alleviated by the large number of data points and relative brevity of the samples.
Problem Analysis - Consultation with the officer led to the conclusion that an absence of reinforcement for performances producing reduced numbers of negative statements by customers was the probable cause of the performance deficiency. Additionally, it was hypothesized that the subject, being new to the job, might fail to discriminate cues that often signal the increased probability of negative customer statements such as problem type, customer voice intonation, and so forth and thus fail to perform differentially to prevent the occurrence of negative statements.

Intervention - Intervention consisted of a simple "feedback" reinforcement procedure in which the subject recorded the total number of satisfied customer calls completed each day on a golf counter. These totals were then charted by the subject at the end of the day.

Baseline tapes were played for the subject and examples of negative statements and how to avoid them were identified by the officer. Since the chart was an intervention, and not intended as a data source, no further validity or reliability checks on the subject's observations were performed. Additionally, the chart was occasionally observed by the officer or supervisor and increases in performance were praised.

As in case one, an informal aversive contingency, fear of punishment for poor performance, may well have been operative throughout the study. However, it was regarded
as a constant error source in both baseline and intervention.

Results and Discussion:

Figure 5 depicts baseline and intervention performance. The baseline mean and standard deviation were 12.8 and 3.3 respectively as compared to a mean of 16 and standard deviation of 6.2 for the intervention. An inspection of the graph would suggest the intervention had little effect on level (initial performance frequency in intervention) but did accelerate the trend or slope of the performance as well as increase performance variability. The trend of the baseline was computed to be .06 while the intervention slope was seven times greater or .42. These trends, and the difference in means, seemed to verify the conclusion that there was an acceleration in the trend while visual inspection and a comparison of the standard deviation suggested an increase in variability as well.

The officer, however, during consultation suggested that the baseline was better described as two sequential trend lines. In his view, days 1-11 fell on a negative trend line followed by a positive trend on days 12-35.

Computed slopes for this alternative analysis found days 1-11 with a negative trend of -1.05 and days 12-35 with a moderate positive trend of .24. The variability in the data, and only slight increase in mean values, failed to provide evidence for the intervention's effectiveness. Organizational profits could not be assessed due to a lack of quantifiable performance products.
Fig. 5 Daily Totals of "Satisfied" Customer Calls for Time Samples
Of particular interest, regarding the alternative analysis, is the fact the officer was concerned with segmented trends in baseline and was able to interpret them accurately. This unprompted interpretation of the data illustrated, in the author's opinion, a potential for applied behavior analysis in organizational settings.

Case Three

Department: Proofing department

General Organizational Objective: To decrease operating expenses.

Departmental Objective: To decrease the total time required to proof daily items.

Employees: Four female proof operators. These employees were all the full-time proof operators in the bank.

Performance Objective: To increase the number of items (balances between deposit checks and totals) proofed daily to 25% above the baseline average.

Procedure:

Baseline and Design - The original A-B-A-B reversal design was revised by the officer subsequent to his consultation with the author. Instead, an A-B withdrawal design was employed for each of the four subjects. Baseline and intervention were each six weeks in duration.

Each operator's proofing machine had a cumulative counter that recorded a running total of items proofed.
At one p.m. and at closing the total on each employee's counter was checked by the supervisor and recorded. The employees were not informed as to the purpose of this check during baseline. Reliability and validity observer checks were not considered necessary.

**Problem Analysis** - Prior to the study the employees were allowed to leave as soon as all items had been proofed. Although this contingency was considered effective by the officer, it was his opinion from experience as a proof operator and supervisor that the proofing rate could be increased. Since all the subjects had worked successfully as operators it was further determined that the performance deficiency was probably a contingency problem rather than one requiring training. To illustrate this hypothesis the officer pointed out that the one employee who failed to operate the machine in the prescribed manner had the highest production rate of the group.

**Intervention** - The first day of intervention the results of the baseline for each subject were distributed. The purpose of the baseline and the intervention procedures were then explained. Unfortunately, the officer and supervisor charted each baseline as three, two-week series of bar graphs rather than a continuous frequency polygon. In the author's opinion, these charts failed to depict level, variability, or trend sufficiently for the employees to gain a clear understanding of their baseline performance.
Secondly, the author had suggested a "feedback" procedure where each employee would chart their own performance in the same manner as the supervisor had during baseline. The intent was a continuation of the anticipated frequency polygon. However, the actual procedure was quite different. The officer distributed the baseline bar charts and asked the subjects to draw a bar adjacent to each baseline bar on the chart. In effect, the performance objective (increase over baseline) varied with each baseline day. Since the results of baseline demonstrated a cyclic pattern the anticipated effect of this sort of charting requirement would be for subjects to match the baseline cycle at a higher level rather than a general increase in performance over all days. Alternatively, the daily change in performance objectives might prove so variable that the interventions would have little or no effect.

Results and Discussion:

Figures 6 through 9 illustrate the results of the interventions for each subject. The discontinuous points in baseline resulted from one holiday and several absences. Although no absences occurred in intervention, this difference was not attributed to the intervention procedure.

Visual inspection of the graphs suggested that the intervention had no significant effect on any subject's average performance but did slightly decrease
Fig. 6 Total Items Proofed Daily by Subject One
Fig. 7 Total Items Proofed Daily by Subject Two
Fig. 8 Total Items Proofed Daily by Subject Three
Fig. 9 Total Items Proofed Daily by Subject Four
the variability and accelerate the trend for all four subjects. These results are displayed in Table 4 below.

**Table 4**

Means, Standard Deviations, and Trends for Daily Items Proofed

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>std. dev.</td>
</tr>
<tr>
<td>S1</td>
<td>8070</td>
<td>2170</td>
</tr>
<tr>
<td>S2</td>
<td>6200</td>
<td>1420</td>
</tr>
<tr>
<td>S3</td>
<td>6640</td>
<td>1410</td>
</tr>
<tr>
<td>S4</td>
<td>8260</td>
<td>2520</td>
</tr>
</tbody>
</table>

The most obvious effect of intervention from inspection of the graphs, however, was with regard to variability in performance. It appeared that a cyclic pattern occurred in baseline with high performance totals on Monday declining through Thursday and then increasing sharply on Friday. This baseline cycle was attributed by the officer to variations in the number of items to be processed. Mondays and Fridays were usually more active than Tuesday through Thursday.

The reduction of variability in intervention relative to these cycles may have resulted from the novel intervention where employees were essentially required to match baseline data points day by day.
To further assess whether the cyclic performances in baseline were enhanced by the intervention, autocorrelations (Hersen and Barlow, pp. 272-275) of lag 1 (Mon. to Tues.), and lag 4 (Mon. to Thurs.) were performed. If serial dependencies between these points increased in the intervention, some additional evidence of a rather complex effect would be provided. Table 5 presents the results of these autocorrelations.

Table 5
Lag 2 and Lag 4 Autocorrelations for Pooled Subjects Over Baseline and Intervention Data

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th></th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lag</td>
<td>r</td>
<td>df</td>
</tr>
<tr>
<td>Mon.-Tues.</td>
<td>.59</td>
<td>16</td>
<td>2.95</td>
</tr>
<tr>
<td>Mon.-Thur.</td>
<td>.51</td>
<td>16</td>
<td>2.41</td>
</tr>
</tbody>
</table>

Significant serial dependencies were present in the baseline confirming the cyclic performances depicted by the graphs for baseline. The substantial increases in serial dependencies in intervention suggested by the inflated correlation coefficients indicate the procedure may have operated in the complex fashion mentioned earlier.

In conclusion, this case was considered a failure from the organizational point of view. The trend accelerations, if maintained, suggest an improvement might occur if the interventions were continued. The effect of intervention
on the cyclic performance is interesting but its organizational value is unclear. Further, the complexity of the actual intervention and the failure to employ a reversal design leave the results generally ambiguous. The officer's personal conclusions were that the intervention may have been effective but measurement problems resulting from daily variations in items to be processed obscured the effect. Since performance means decreased, no profits were realized.

Case Four

Department: Credit card department

General Organizational Objective: To increase the market share of credit card customers.

Departmental Objective: To increase the speed and accuracy of processing credit card applications.

Employee: Female input clerk. This employee was the only individual assigned this task in the bank. Four months of experience as input clerk.

Performance Objective: To increase the number of credit card applications key punched into the computer to 15 per hour.

Procedure:

Baseline and Design - An A-B-A-B reversal design was employed in this case study with approximately two and one half weeks per phase. During the first baseline the subject was observed covertly. At the end of each work day the
supervisor interrogated the computer as to the total number of applications processed that day. Also, the total amount of computer "down-time" was obtained and a ratio between hours available for processing and total items processed was derived. Since observation was taken directly from computer records, no observer validity or reliability checks were employed.

**Problem Analysis** - The officer thought the subject's performance deficiency was due to a contingency problem rather than lack of training chiefly on the basis of her current accuracy and rate of performance.

**Intervention** - A feedback procedure was implemented in both intervention phases in which the subject recorded her total items to available hour ratio at the end of each day. During the second baseline she was asked to stop the charting and resumed charting in the final phase.

**Results and Discussion:**

Figure 10 displays the results of the study. Table 6 lists the means, standard deviations, and trends for each phase. Both the figure and table depict a temporary decrease in performance following the first intervention. This is followed by an increase and leveling of performance below the baseline level. A return to baseline resulted in a further deceleration in performance rates (-.29).

The final intervention reversed this trend but failed to return to the original baseline level or trend.
Fig. 10 Daily Average Hourly Entries of Credit Card Applications for One Operator
The intervention was considered unsuccessful, both technically and in terms of organizational benefits. Several variables in the study might account for the results. First, the performance objective of 15 items per hour was met during the first baseline. Typically, this finding would result in a decision not to intervene but an intervention was conducted by the officer nevertheless.

Secondly, in the post-study consultation the officer stated the credit card sales incentive program for bank officers was terminated for a short period and then reintroduced. The result was a probable decrease then increase in the number of applications to process.

Third, the subject gave her notice of resignation midway through the study and three days after the study returned to college for preparation as a teacher of the deaf.

Finally, the subject was deaf and the purposes of charting or verbal praise may have had unusual effects due to her impairment. Regardless of these speculations the reversal design left an ambiguous picture of the intervention effects and demonstrated the experimental control problems inherent in an organizational setting. No organizational profits were realized from the study since there was a slight decrease in average performance over the four phases.
Table 6
Means, Std. Deviations, and Trends
for Number of Application Entries Per Hour

<table>
<thead>
<tr>
<th></th>
<th>BL1</th>
<th>INT1</th>
<th>BL1</th>
<th>INT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean</td>
<td>15.2</td>
<td>11.5</td>
<td>9.4</td>
<td>14.1</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>4.7</td>
<td>5.2</td>
<td>2.7</td>
<td>5.1</td>
</tr>
<tr>
<td>trend</td>
<td>0.61</td>
<td>0.21</td>
<td>-.29</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Case Five

Department: Commercial loans

General Organizational Objective: To decrease operating expenses of the organization.

Departmental Objective: To increase the speed of processing and collecting loan notes.

Employee: One female note department teller with two years experience. This individual was the only note teller.

Performance Objective: To decrease the latency between closing and note cage books balanced to an hour.

Procedure:

Baseline and Design - An A-B-A reversal design was used in the study with an extended initial baseline. The first baseline was 18 days followed by a 10 day intervention and returning to a final 10 day baseline.

After closing at four p.m. each day the subject was responsible for balancing the note deposits and drafts transacted that day. When this was accomplished the
supervisor was informed. During baseline the latency between closing and the subject balancing the ledgers was covertly timed and recorded by the supervisor each day. No need was seen for observer validity or reliability checks.

**Problem Analysis** - Discussions with the supervisor and officer established that formal training was not indicated but that the presentation of cues for five common errors and reinforcing correct performances might reduce those errors and consequently reduce the balancing latency each day. The error categories arrived at included; a failure to balance checks with "ticklers", transposition errors, failures to apply principle and the interest correctly, balancing tape listings improperly, and errors caused by others.

**Intervention** - Originally the author and officer developed a tally sheet on which the subject when balancing would record the frequency of each type of error. These counts were to be charted by the employee and reductions in error frequencies were to be praised by the supervisor.

This procedure was later found to be too time consuming and was modified such that periodically the supervisor discussed with the subject during balancing the frequency and causes of the various error categories and praised her for an absence of errors in any category.
Results and Discussion:

Figure 11 and Table 7 describe the results of the study.

Table 7

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>75</td>
<td>63</td>
<td>60</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>60.2</td>
<td>45.7</td>
<td>35.4</td>
</tr>
<tr>
<td>Trend</td>
<td>2.4</td>
<td>-1.3</td>
<td>-.6</td>
</tr>
</tbody>
</table>

The results demonstrate a successful reduction in the average balancing latency, latency variability, and a shift from a fairly high positive trend in baseline to a negative trend during intervention. From the organizational point of view, the project was successful and the subject achieved the performance objective in the second baseline.

However, from a technical viewpoint, the performance latencies failed to return to initial baseline levels during the third phase. Average latency, variability, and trend continued in the direction established in the intervention despite the removal of the procedure.

Consultation with the officer resulted in two hypotheses relative to the failure of performance to return to initial baseline levels in the third phase. First, the officer stated the subject was quite enthusiastic about the intervention and accepted the performance standard as a "challenge" in his opinion.
Fig. 11 Daily Balancing Latencies for One Note Teller
Secondly, and an issue of general importance, was the fact the first baseline was conducted covertly which was subsequently impossible to achieve in the third phase. The inability to covertly monitor performance in all but initial baselines results from the information the subject receives during intervention. After intervention subjects are more observant of supervisory observations which makes covert monitoring difficult or impossible.

Assuming this was the case in this study, the second and third phases could be seen as one intervention with the significant independent variable the supervisory observation. The design would then become an A-B withdrawal paradigm that demonstrated the effectiveness of supervisor observation in reducing latencies. However, since the feedback and cue procedures were introduced at the same time as supervisory observation, there is no way to assess which procedure produced the effect or, if in fact the performance shift resulted from any of the procedures.

Case Six

Department: Data Processing

General Organizational Objective: To decrease organizational expenses.

Departmental Objective: To reduce maintenance costs and computer "down-time".

Employees: All full-time computer operators. Males ranging in experience from 30 days to four years.
Performance Objective: To increase the total number of hardware errors logged daily by the operators.

Procedure:

Baseline and Analysis - Originally an A-B-A-B design was to be reported but the installation of a new computer during the final B phase resulted in a substantial increase in hardware errors that confounded the interpretation of this phase's data. (The effect in this phase was significantly favorable to interpreting the intervention as effective.) As a result, an A-B-A design will be reported in which the officer covertly totaled the number of errors logged for all subjects at the end of each 24 hour period. This included all logs for all three of the eight hour shifts. Each phase was three weeks in length.

Since the target behavior product was number of written error logs, no validity or reliability checks were considered necessary.

Problem Analysis - The performance consisted of writing on a log sheet which device needed repair, when a phone request for service was made, when the service representative arrived, and how long the device was inoperative. Since these were relatively simple operations training was not considered appropriate by the officer. A contingency plan was developed to modify the cues controlling the logging performance.

It was determined that failures to log were not currently punished and perhaps were inadvertently
reinforced. The hypothesized inadvertent reinforcers occurred during actual computer down-time which resulted in time-off for the subjects while the equipment was repaired and often overtime after repairs, which was quite profitable.

To compensate for these contingencies a more immediate contingency for proper logging was introduced.

**Intervention** - Two related procedures were used in an attempt to accelerate the group logging frequency. The logging sheet currently employed required that information be written in longhand under column headings. The individual loggings were anonymous also. This format was replaced by a computer card that listed the major possible hardware errors. The operators checked the error description that was appropriate. Also, the subjects signed the cards in contrast to the earlier procedure.

In addition to simplifying and personalizing the logging procedure, the subjects were instructed to fill out the card every two hours and check the "no problem" category or a problem category. These cards were then entered into a time clock in the work area and the time was printed on the card. It was anticipated the time clock would provide the immediate contingencies necessary to establish a better logging routine.
Results and Discussion

The time clock appeared to serve its function. The officer noted that only rarely did a subject exceed a ten minute variance in reporting throughout the study. The results of the study are illustrated in Figure 12 and Table 8.

Table 8
Group Error Logging Means, Std. Devs., and Trends for Six Computer Operators

<table>
<thead>
<tr>
<th></th>
<th>Baseline 1</th>
<th>Intervention</th>
<th>Baseline 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean</td>
<td>.67</td>
<td>3.07</td>
<td>.73</td>
</tr>
<tr>
<td>std. dev.</td>
<td>.90</td>
<td>1.44</td>
<td>.70</td>
</tr>
<tr>
<td>trend</td>
<td>-.08</td>
<td>-.14</td>
<td>-.04</td>
</tr>
</tbody>
</table>

Both visual inspection of the graph and the descriptive statistics indicate the intervention was effective. The slight negative trend during intervention is somewhat worrisome but not substantially increased over the initial baseline.

The author was also pleased with the officer's unwillingness to present the second intervention despite an obvious performance increase. This would suggest the officer understood the importance of experimental control in the interpretation of performance data.

Because error logging was preventive maintenance, there was no direct method for calculating organizational profit.
Fig. 12 Total Daily Error Loggings for a Group of Six Computer Operators
Case Seven

Department: Branch Banking

General Organizational Objective: To increase bank profits.

Departmental Objective: To increase the accuracy of branch retail banking operations.

Employees: Four female branch tellers with four months, one and one half years, four years, and ten years experience. Selected because the officer anticipated the greatest number of performance errors from this group.

Performance Objective: To reduce the absolute daily teller differences (books balance) by 25% of baseline average.

Procedure:

Baseline and design - A modified multiple baseline across subjects was employed similar to case one. Each subject was baselined for five weeks followed by a five week intervention. Daily teller differences were recorded by the officer from computer derived audit reports received weekly. Observer validity and reliability were not considered necessary to check.

Problem Analysis - In the officer's opinion, a training problem was not indicated. It was thought that the most likely source of teller errors during the day occurred during multiple transactions with a customer. For example, a customer might deposit a check, part in savings and part in a checking account, and ask for cash as well. This would
essentially involve three transactions and increase the chances for an arithmetic or recording error.

It was suggested that some sort of stimulus control procedure that would cue the subject to attend more closely to situations involving multiple transactions might reduce errors and consequently reduce daily teller differences.

**Intervention** - During the intervention packages of recording sheets were distributed to the four subjects. Each sheet had eight columns labeled date, customer's name, demand deposits, savings, loan deposits, miscellaneous, less cash, and total transactions. The subjects were instructed to fill in the sheets whenever a multiple transaction occurred. The sheets were designed to cue the tellers to attend closer to multiple transactions and provide information for possible error sources when balancing at the end of the day.

**Results and Discussion:**

Table 9 presents the average absolute daily teller differences for each subject. The average is presented as a median since an occasional large single error would produce a substantial difference that would unrealistically modify the mean. Also, teller offsets, where large errors on one day were found and modified the following day by intentionally recording an offsetting amount, were not included as data.

No individual graphs are presented for these subjects in that each was essentially a flat line near zero through
both phases of the study. The occasional spikes produced by large teller differences were infrequent and depicted no pattern worth displaying.

Table 9

Percent Days Balanced, Medians, and Ranges for Daily Teller Differences for Four Branch Tellers

<table>
<thead>
<tr>
<th>Experience</th>
<th>% Days Balanced</th>
<th>Median</th>
<th>Range</th>
<th>% Days Balanced</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>1½ yrs.</td>
<td>50%</td>
<td>$2.50</td>
<td>$1500</td>
<td>63%</td>
<td>$.00</td>
</tr>
<tr>
<td>S2</td>
<td>4 mos.</td>
<td>67%</td>
<td>$.00</td>
<td>$470</td>
<td>58%</td>
<td>$.00</td>
</tr>
<tr>
<td>S3</td>
<td>4 yrs.</td>
<td>71%</td>
<td>$.00</td>
<td>$1000</td>
<td>75%</td>
<td>$.00</td>
</tr>
<tr>
<td>S4</td>
<td>10 yrs.</td>
<td>58%</td>
<td>$.00</td>
<td>$1000</td>
<td>63%</td>
<td>$.00</td>
</tr>
</tbody>
</table>

The general results of the study were negative. The slight changes in the percent of days balanced was increased in three of the interventions but not enough to suggest a significant intervention effect. Similarly the range of errors was reduced in three cases by the intervention but these differences reflected only a single data point in each case.

The conclusions that may be drawn from the study are that the subjects selected were performing at standard in baseline and no intervention was called for. Retrospectively, the officer should have discontinued the study and selected new subjects upon his analysis of the baseline. However, the officer's concern that the author's study not
be interrupted coupled with the author's absence during the
decision period prevented the study's discontinuance.

A second finding in the study was that multiple
transactions were more infrequent than the officer had
thought and probably not the main source of teller errors
as originally suspected. Of course, without the interven­tion the data upon which this finding rests would not have been available. No significant profits resulted from the inter­vention.

Case Eight

Department: Personnel

General Organizational Objective: To reduce organizational
operating expenses.

Departmental Objective: To reduce personnel turnover costs.

Employee: Personnel office manager

Performance Objective: To reduce the latency between noti­fic­ation of a job opening and the day a job is filled.

Procedure:

Baseline and Design - The project the personnel
officers developed in the training program concerned the
measurement of the effectiveness of a teller training
school soon to be installed. Due to unforeseen obstacles
this project was not possible to start during the study and
a second project was begun one month later. As a result of
this delay an A-B withdrawal design was necessary since
only two months remained to complete the project.
The latencies of 24 job positions were observed covertly over a one and one half month period for baseline. This was followed by a one month observation period in which 10 job positions were observed during intervention.

The officer's recorded the latency between notification of an opening and a job applicant's acceptance of the position. This data was routinely supplied as part of the personnel function and no observer validity or reliability checks were employed.

**Problem Analysis** - The officers determined that due to the number of tasks the subject performed each day she often failed to attend to the filling of job vacancies. A contingency problem was considered the source of the problem and was further determined to be a function of inadequate stimulus control.

**Intervention** - The purpose of the study was explained to the subject and a packet of specially prepared forms were given to her. These forms provided spaces for a listing of position, date position opened, and date of job offer. The subject was instructed to place the forms on a clipboard which hung on the wall in her office as a constant reminder of the openings left unfilled.

**Results and Discussion:**

Table 10 portrays the results of the study. A real time illustration was not possible since the frequency of job positions becoming available determined how often the performance occurred.
Table 10
Personnel Office Manager's Latencies in Filling Job Openings

<table>
<thead>
<tr>
<th>days latency in filling position</th>
<th>percentage of baseline positions</th>
<th>percentage of intervention positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>33%</td>
<td>20%</td>
</tr>
<tr>
<td>5-9</td>
<td>17%</td>
<td>50%</td>
</tr>
<tr>
<td>10-14</td>
<td>38%</td>
<td>20%</td>
</tr>
<tr>
<td>15-19</td>
<td>04%</td>
<td>10%</td>
</tr>
<tr>
<td>20-24</td>
<td>04%</td>
<td>00%</td>
</tr>
<tr>
<td>25-29</td>
<td>00%</td>
<td>00%</td>
</tr>
<tr>
<td>30-34</td>
<td>04%</td>
<td>00%</td>
</tr>
</tbody>
</table>

The mean latency for baseline was 9.1 days (N=24) and for intervention was 7.1 days (N=10). There was no evidence to indicate the procedure had been effective either in terms of organizational benefit or from a technical perspective.

The officers concluded that too many uncontrolled variables including: type of job to be filled, some requiring more time to fill than others; number of job applicants in the area; emphasis placed on filling the position by employment agencies contacted; the salary level of the position; and weather and holidays all could affect the latency for filling a particular job. The officers intended to reassess the intervention measuring the number of phone calls to agencies and/or interviews rather than latencies.
Department: Marketing

General Organizational Objective: To expand the bank's Share of available customers.

Departmental Objective: To maintain and expand personal contact with current and potential customers.

Employees: Seventy bank officers which included all the officers in the organization.

Performance Objective: Each officer should contact by phone or in person a minimum of 100 customers each year to discuss current or new accounts.

Procedure:

Baseline and Design - This study was started nine months prior to the training program. The author assisted in the development of the intervention in consultation with the executive vice-president and the program was administered by the marketing director. Its inclusion as a case study is primarily because the intervention was novel and because it was administered throughout the organization.

The officers that designed and implemented the study were at that point in time unfamiliar with applied behavior analysis designs. Therefore a simple A-B withdrawal design was employed.

Officer calls were tabulated from self-reports supplied by the officers in the program. No observer validity or
reliability checks were utilized however the dates and customer names were included on the call reports which may have served to reduce inflated call reports.

**Problem Analysis** - Prior to the project attempts at increasing the officer call rate had relied on aversive techniques. Officers were reprimanded, pay increase denied, and at one point the division head whose officers turned in the lowest call reports was required to place a statue of a goat on his desk until his division calls increased. These procedures were generally ineffective in the vice-president's opinion. It was determined that a reinforcement procedure might prove a more effective contingency.

**Intervention** - Contrary to the author's intent, two reinforcement procedures were introduced in the first month of the intervention. It is therefore impossible to distinguish which intervention had the more significant effect. The two interventions will therefore be treated as a "treatment package".

One component of the intervention was a monthly dinner in the bank's dining room for the division head and officers in the division with the most calls in a particular month. A second component was a lottery that occurred every two weeks at the officer's general meeting. Each call report for the month was put into a large revolving drum. At the meeting the drum was rotated and a call report randomly selected. The officer was asked to describe his call to the group (a further validity check and possible reinforcer)
and received $50 in merchandise from a variety of stores that had accounts with the bank. At the end of the drawing all call reports were removed and the process repeated in two weeks.

Six months after these interventions were implemented the officers added a third procedure in which any officer exceeding the call total of the vice-chairman of the board would receive a free dinner at the expense of the vice-chairman.

Results and Discussion:

Figure 13 and Table 11 describe the results of the study.

Table 11

Means, Std. Deviations; and Trends for Total Monthly Officer Calls

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention 1</th>
<th>Intervention 1 &amp; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean # of calls</td>
<td>756</td>
<td>1072</td>
<td>1205</td>
</tr>
<tr>
<td>std. deviation</td>
<td>92</td>
<td>159</td>
<td>351</td>
</tr>
<tr>
<td>trend</td>
<td>-4.1</td>
<td>34.6</td>
<td>-129.4</td>
</tr>
</tbody>
</table>

A comparison of baseline to intervention 1 depicts a large effect on the mean, variability, and trend of officer call totals. It is regrettable that the interventions were introduced simultaneously violating what Hersen and Barlow (1976, pp. 82-91) have termed the "single variable rule". There is no way to assess which intervention contributed
Fig. 13 Total Monthly Officer Calls for 70 Bank Officers
the most to the performance gains, which, despite the organizational benefits, severely limits the procedure's generality for future applications.

Even more ambiguous are the effects of the second intervention. A visual inspection of Figure 13 shows a rather large increase in level but the sizable negative trend of -129.4 as compared to the previous positive 34.6 suggests the effects may not hold over time.

To summarize, the first intervention likely did accelerate performance, but the method of intervention leaves the specific results unclear. The second intervention was introduced without a baseline and in addition to the previous interventions. As a result its effects are essentially unknown. The study does demonstrate, however, the potential of group contingencies and the value of training in experimental design and analysis techniques. Although there was a substantial increase in the number of officer calls, there was no direct method for assessing the percentage of calls resulting in new accounts. Consequently, no firm estimate can be made concerning the organizational profits resulting from the increase in calls.
IV. SUMMARY

A brief overview of organizational behavior modification was presented and distinctions drawn among operant behaviorism, applied behavior analysis, and behavior modification. Although these paradigms have typically been applied together, it was pointed out that operant behaviorism is a model of behavior, applied behavior analysis a research strategy, and behavior modification a technology. The combination of the three, in practice, has proven beneficial in clinical and educational applications through fostering a mutual exchange between behavioral technology and science and by providing a convenient method for practitioners to assess the effectiveness of their interventions.

A concern was expressed that researchers and practitioners of organizational behavior modification have neglected to fully explore the principles of operant behaviorism as they might apply to organizational behavior. The result has often been a misinterpretation of these principles and/or a misapplication of the technology.

Further, in contrast to clinical and educational applications, OBM studies have often not included applied behavior analysis designs or procedures which seriously
undermines their generalization to the broader behavior modification literature. The absence of applied behavior analysis from OBM interventions also reduces the technological advantages of a built-in assessment and decision making strategy that has proven valuable in other settings.

The need for a workable management technology for improving employee performance was discussed and the potential role of OBM in providing such a technology described. It was argued that organizational behavioral science has historically emphasized cognitive variables which, due to their complexity and inaccessibility, has not produced a practical approach to modifying employee performance on a day-to-day basis.

In addition, a reliance on group-comparisons and statistical interpretations of behavioral data was noted, and it was argued that though such procedures certainly have scientific validity and generality, they may prove cumbersome in the on-line assessment of single or small groups of employees' performance. Applied behavior analysis may be a more appropriate strategy for such situations because it relies on intrasubject comparisons in real-time which often don't require relatively large randomly assigned groups or statistical analyses beyond the capabilities or resources of the practicing manager.
Various approaches to the training of managers in OBM were briefly described and a rationale for the approach employed in this study was presented. The author's version of an OBM program was outlined and included specification of organizational and performance objectives, a performance cost-benefit analysis, design and implementation of an analysis plan, selection and implementation of an intervention, and strategies for terminating an intervention.

Several questions were posed in the final section of the introduction. First, it was noted that many of the key principles of operant behaviorism were misinterpreted by OBM practitioners. Further, the technology of behavior modification was often misapplied in organizational settings and applied behavior analysis designs were frequently missing from OBM reports. For OBM to serve as an effective management technology these deficiencies should be corrected. Since a major approach to instructing practicing managers in new techniques is the workshop, the author decided this approach should be employed in the case studies. If managers could learn to use the concepts and procedures successfully after a workshop and some consultation, it would suggest the technology could realistically be introduced into an organization. If this approach failed, or partially succeeded, hopefully information would be obtained regarding which concepts or procedures were difficult to understand or employ with only brief training. Procedures and concepts
identified as difficult could then be taught differently in the future, modified themselves, or eliminated from the program depending on the outcomes of the study.

Of particular importance, in the author's opinion, was how well the managers designed and conducted their applied behavior analyses since it had been stated that the analysis is critical to a true management technology for improving worker performance. Additionally, the author was concerned with the managers' attitudes toward all aspects of the program. As stated previously, if the technology was perceived as invalid, unnecessary, or impractical, then it would fail to serve its purpose because managers wouldn't employ it in their professional activities.

To insure the technology was employed as much as possible as it would be in a non-research application, the author attempted to allow the managers as much individual initiative as was feasible in the development, implementation, and interpretation of their individual projects. It was anticipated this strategy might fail to produce significant employee performance increases in some instances, but it was expected that failures might yield data regarding aspects of OBM that were difficult for managers to conceptualize or utilize. The following conclusions support some of these contentions but leave unresolved many other issues.
Were the officers able to specify organizational objectives and are these objectives necessary for an effective OBM program? Three general purposes were given in the workshop for the development of organizational objectives prior to the implementation of OBM. First, employee performance objectives must be written that are important to the accomplishment of organizational goals. Without organizational objectives unimportant or conflicting performances might be specified.

Secondly, organizational objectives help insure that intended contingencies for improved performance do, in fact, occur. Objectives reduce the possible control of informal contingencies that may often develop when supervisory policies are ambiguous.

Third, organizational objectives insure that once performance improvements have occurred they will be maintained. Written objectives reduce the likelihood that once standard is met performance requirements might "drift" or that daily fluctuations in supervisory concerns could result in failures to consistently carry out interventions.

Overall, the attempt to develop general organizational and departmental objectives was unsuccessful. The organization had no such objectives prior to the workshop and it was not possible in five days to develop a comprehensive system of objectives that would assist in selecting key performances for a performance cost-benefit analysis.
However, the officers did rate the objectives as useful to their work. In fact, ranks two, four, and five, of the ten most useful topics in the workshop, all concerned organizational objectives. Another important function of organizational objectives, relative to OBM, was discovered in the final interviews. In banking, personnel costs far exceed any other. Despite the potential profits that could be realized from correcting key performance deficiencies, little systematic effort was made to do so. Several of the officers suggested that it was often difficult to relate employee performance to "profit and loss" statements because their relationship to organizational objectives was usually obscure. For example, it was difficult in case two to relate in dollars the effect of increasing satisfied customer calls to general banking operations. The officer pointed out that customer relations personnel, along with tellers and loan officers, had more direct contact with retail customers than anyone else in the bank. Probably, deficiencies in customer relations performance would contribute more to account withdrawals than any other activity. However, the significance of these performances did not seem apparent to the officer until the interviews.

In cases three, four, five and eight attempts were made to increase the processing speed of proof operators, an input clerk, a note teller, and the personnel office manager. It was generally assumed that an increase in processing speed
would be valuable to the organization. In retrospect, however, prior to the proof operator case there were several days each week when the operators finished early and were allowed to leave. The speed of processing seemed to depend more on the number of items to be proofed each day than the processing speed. Further, it was not clear what organizational advantage was gained by increasing proofing speed relative to the flow of information in other departments.

These questions were similarly unanswered in the other cases. Based on the interviews, and previous experience in teaching behavior modification, it is the author's opinion that several of the officers selected "problems" because they were requested to and, due to a lack of departmental objectives and identified key performances, simply selected performances that were easy to specify and measure. This is not an uncommon occurrence, in the author's experience, and illustrates the necessity for organizational objectives, identifying key performances, and a performance cost-benefit analysis.

Cases one and eight, in contrast, illustrate that performances that directly produce income, such as sales, demonstrate their value directly. The enthusiasm generated by these two projects, in contrast to the others, further suggests a potential problem for OBM. An organization that employs OBM may tend to overemphasize performances that unambiguously relate to profits at the expense of performances
that are maintenance oriented and whose relevance is only apparent when gross deficiencies occur. For example, despite the technical success of case six in increasing computer operators' maintenance logging, the officer was unable to directly demonstrate his success was beneficial to the organization. Computer "down-time" was quite costly to the organization but no direct empirical relationship between reporting equipment defects and down-time was established.

The values of objectives and the identification of key performances would seem substantial and is recommended as a component of OBM programs. The method attempted here, however, is not recommended since time restrictions are unacceptable and many initial decisions must be made at the highest management levels. Desirable alternatives could be a preceding MBO program or the use of a consultant to establish objectives and identify key performances. In some organizations this phase could be performed in-house but should, in any event, precede the OBM workshop.

Were the officers able to specify employee performance objectives? One of the most difficult concepts to grasp in the operant framework seems to be the concept of an observable behavior. This difficulty is probably due to our everyday use of a behavioral "shorthand" and resulting an inability to articulate goals concretely. In the workshop, several "exercises" were dedicated to developing these skills and the author was surprised to find that upper management individuals had as much difficulty in behavioral
specification as had first-level supervisors in previous training programs.

Despite these difficulties, most of the managers were able to write behavioral descriptions for their case studies. Two problems should be considered in future OBM programs. As previously described, complex performances, or performances with intangible outcomes, are difficult to specify behaviorally. There was a tendency for the officers to select performances that were simple to specify rather than important to the accomplishment of organizational objectives. Also, the author requested that performance standards be established prior to baseline which, in retrospect, was a poor tactic. Only where historical data is available would this approach be suitable, and even then such data should be employed advisedly since it may have been obtained under different conditions or the measures not directly related to the case at hand.

Ideally, in those cases where the standards in a performance objective must be established concurrently with an OBM program (as in this study) they would be developed with respect to the performance levels required to accomplish the departmental objective and with respect to the performance levels observed in the baseline. In other instances production standards may already be established and it is then necessary to relate the performance standard to the existing production standard.
In either event, performance standards are difficult to develop and rather than prevent the implementation of an OBM intervention it would be preferrable to employ what are termed "open ended" objectives. In this case, performance standards would not be incorporated in the objective. Rather, any significant increase in performance in comparison to baseline would be acceptable. In effect, this approach was essentially adopted in the case studies.

Was the performance cost-benefit analysis employed successfully and is it useful in OBM? The performance cost-benefit analysis designed and presented by the author, required a series of estimates by the officers. They were instructed to estimate the organizational value of correcting a performance deficiency. Value was the relationship of the rated importance or dollar profit of the objective to the estimated degree of deficiency from the performance standard. For example, in case one the estimated value of including insurance in 90% of all loans would be computed by calculating the average percentage of loans sold with insurance during baseline and then calculating the increase in profits if 90% were achieved.

In cases where dollar values were difficult or impossible to assign the alternative rating system was employed. Each officer was to rate the importance of achieving the organizational objective and the degree of performance deficiency. A product of the two ratings would represent its organizational value.
The second phase of the analysis was to estimate the costs of an intervention. An approach was presented in which a rating of estimated officer time to develop and implement the intervention and resource costs (reinforcers, etc.) rating were performed. The product of these two ratings was considered the estimated cost of the intervention. Alternatively, a dollar based version was presented in which officer time and resource costs were expressed in dollar costs.

The organizational benefits were derived from the difference computed between either rated or dollar value and rated or dollar cost. The most "beneficial" interventions were then to be selected for implementation based on the above analysis.

Each officer submitted their performance cost-benefit analysis to the author as well as the performance objective selected as most beneficial to the organization. The rating approach was used considerably more than the dollar based approach probably due to its simplicity and no necessity for involved data collection.

Several problems were noted in the procedure. The major problem was an absence of departmental objectives to relate key performances to and thus enable a more objective estimate of the performance's actual organizational value. Similarly, in many instances no data was available (or was not obtained) as to the actual current level of performance which resulted in the magnitude of the deficiency estimate being highly
subjective. Further, without a more complete listing of key performances there were relatively few performances to analyze. This made the analysis less useful in many cases since the number of proposed interventions was quite small.

In the final interviews some officers stated that they had selected interventions that would be simple to perform rather than most beneficial to the organization. This is understandable given the lack of organizational objectives and associate key performances, time constraints, and a failure to include the officers themselves in the contingency designs. That is, it was never made clear to the officers what the consequences of successful interventions would be. This critical oversight will be discussed later in this section.

In summary, the study failed to demonstrate the utility of the specific performance cost-benefit analysis taught in the workshop. It did, however, point out the interdependence of the first three phases of the OBM program developed by the author. Without general organizational objectives, departmental objectives are difficult to develop. Without departmental objectives, key or critical performances are difficult to specify. Without a listing of key performances, a performance cost-benefit analysis becomes so subjective it is unnecessary.

It must be noted, however, that each of the above steps are additions to OBM by the author. They are decision-making
devices to insure that only interventions are attempted that will result in significant organizational benefits. As described earlier, OBM is the application of the operant model, applied behavior analysis, and behavior modification to organizations. Performance objectives can be specified without organizational objectives or a performance cost-benefit analysis. In fact, these approaches have rarely been employed in clinical or educational applications. If organizational objectives and cost-benefit analyses are difficult in an organization, one can only imagine the problems these techniques face in family counseling, community psychology, or educational systems. Nevertheless, needless interventions or counterproductive objectives should be greatly reduced by employing these procedures. An alternative approach to employing these procedures will be discussed at the conclusion of this section.

Were the officers able to conduct a contingency analysis and is the analysis an important component of OBM? A contingency analysis may be conducted through interviews with individuals who are knowledgable about the contingencies, or empirically by observing and recording environmental antecedents and consequences during baseline. In either case, the analysis is based on the operant model of behavior and examines antecedents (stimulus control) and consequences (reinforcers, punishers, etc.) contingent on the target performance. Such an analysis often provides the analyst
when properly conducted, with information that is valuable in designing an intervention.

A further purpose of the analysis is to determine if the performance deficiency is due to a lack of training (the employee can't perform) or due to faulty contingencies (the employee won't perform). This determination greatly influences which behavior modification interventions are selected. Training problems would suggest the use of procedures such as modeling, prompting, fading, shaping, chaining, or behavioral rehearsal among others. Contingency problems that resulted in a performance decrement might lead to procedures such as positive and negative reinforcement, changes in the schedule of reinforcement, decreasing the occurrence of incompatible behavior, or increasing the effectiveness of current reinforcers among others. Finally, contingency problems that maintained undesirable behavior might be corrected by positive and negative punishment procedures, time-out, response cost, overcorrection, extinction, increasing the rate of incompatible behaviors, DRL, or DRO reinforcement schedules, among others.

The interview method of contingency analysis was used for each of the case studies. The author typically asked the officer what the consequences of the desired performance were, what the latency between performance and consequence usually was, and how often and regularly the consequences occurred.

Once the consequences, or lack of them, were
identified the procedure was repeated to identify antecedents. Officers were asked when and where performance was expected to occur and what cues were available to the employee to inform him if performance was, or was not, expected.

In case one the only consequences the officer could identify for the performance of selling insurance were delayed aversive cues. Occasionally the officer would criticize employees who were not selling enough insurance. No standard had been established regarding the expected percentage of notes sold with insurance.

In case two the hypothesized consequation for making statements that led to "satisfied" customers were all aversive. Such statements tended to reduce the aggressiveness of the customer (negative reinforcement) in some cases, or often prevented a customer request to speak to the supervisor (avoidance conditioning). On the other hand, it was speculated that curt behavior may have often terminated an irritating call (negative reinforcement). No formal organizational reinforcers were contingent on the performance.

In this case, the officer speculated that the employee might lack sufficient training to respond properly to irate customers. For this reason modeling was employed in the study in addition to the feedback procedure.
In case three, formal organizational consequence occurred prior to the study. When all of the proof operators had completed the day's items they were allowed to leave early (negative reinforcement). This contingency also likely included a group aversive control procedure since all the employees had to finish before any could leave.

In consultation with the author, it was determined that low proofing rates were greatly affected by particular sorts of errors. A cue sheet was developed in which critical uses were charted daily by the operators. However, the officer chose not to include this procedure in his intervention employing only the modified feedback charts described in the case study.

In case four, there were no formal organizational contingencies for performing at standard. The feedback procedure and praise were ineffective for any number of reasons including organizational changes that affected the number of applications in the later phases and changes in the employee's personal objectives. These contingencies developed during the study and were identified subsequently, and so were not part of the original analysis.

In case five, the formal organizational contingency was again aversive. If the employee failed to balance by quitting time she, and her supervisor, were required to remain until they were balanced. A feedback and praise procedure was employed to reduce these latencies.
In consultation with the officer, the author suggested that perhaps latencies could be reduced by decreasing the number of transaction errors made during the day. A sheet was to be posted in the teller cage listing the major types of errors. During balancing errors were to be charted as they were discovered. It was speculated that increases in certain types of errors on the chart might result in the employee attending to these errors more during the day. Unfortunately, this aspect of the procedure was not conducted.

In case six, no formal organizational contingencies were in affect for logging equipment errors. However, seemingly powerful informal contingencies existed that were incompatible with the performance objective. Presumably, logging equipment errors assisted in the preventing of computer "down-time". In discussing the effects of such down-time on the operators it was discovered that during down-time they were given essentially free time. Further, once repaired, overtime was given the operators to catch up with the processing requirements. In essence, it appeared failing to log was reinforced while logging was punished.

These contingencies were, however, remote and it was determined more immediate contingencies could counteract their effects. For this reason, antecedent control and immediate feedback (the time clock stamp) were introduced.
This procedure relied on aversive control to a large extent since failures to receive a stamp at the correct intervals was not formally related to incentives. Whether the installation of performance cues with unspecified consequences is aversive control or positive reinforcement would usually depend on the historical management style of the officer. If he had traditionally managed through praise, such unspecified cues would likely control performance through positive reinforcement. If threats and criticism were the historical style, then the cues would be preaversive.

In case seven, no formal organizational contingencies existed for minimal teller daily differences nor was any performance standard communicated. The officer speculated that most errors occurred during the multiple transaction due to the increased complexity of the paper work and arithmetic. Cue sheets were developed and tellers instructed to write down each multiple transaction. In this way, it was hoped the tellers would attend more to the computations in multiple transactions.

Case seven points out a serious deficiency in subjective or rational approaches to contingency analysis as opposed to an empirical approach of observation during baseline. It was discovered during baseline and intervention very few multiple transactions actually occurred. Had this been established earlier a different procedure would have been implemented.
In case eight, no formal organizational contingencies existed for keeping personnel replacement latencies to a minimum. Further, no standard had been established as to what an acceptable latency was. A feedback system was installed but failed to modify performance due to numerous uncontrolled variables affecting the employee's opportunity to fill a position.

This case suggests a critical feature of a contingency analysis is to determine if the employee has the resources to perform at standard. Faulty materials or equipment, or in this case, largely uncontrollable environmental variables may result in poor performance rather than a lack of training or faulty contingencies.

Case nine, unlike the other cases, began several months before the study. Through phone and mail correspondence the vice-president had requested suggestions as to how to improve the "officer call program". A performance standard had been established by consulting other banks. Each bank officer was required to make 100 customer calls annually. Formal contingencies had been established to insure the call quota was met but had been largely unsuccessful. Several contingencies had been tried, and each was aversive. Recent examples included placing a statue of a goat on the division officer's desk of the division that had the lowest total annual calls. This was followed by not giving a salary increase to the division officers whose divisions failed to meet the quota.
The author suggested abandoning the aversive procedures and reducing the delay of reinforcement by providing positive reinforcement at as short an interval as was practical. Several reinforcement procedures were discussed and a lottery every two weeks was selected. Unfortunately, additional reinforcers were introduced concurrent with the lottery which obscured its effects.

Case ten was not reported because the officer failed to conduct the study. A contingency analysis was performed, however, and is reported. In this case the performance objective was to increase the number of new customers the data processing accounts salesman visited each month. No formal organizational contingencies currently existed. An analysis of the consequences of a sale to a new customer found two potential punitive consequences. First, the officer was well acquainted with the salesman and stated that he was quite uncomfortable in the presence of strangers. Secondly, a successful sale to a new customer was followed by a significant increase in the workload of the salesman since he was required to modify the bookkeeping system so that it was compatible with the computer system. Subsequent to this analysis the officer stated that if these contingencies were described to him as the employee, he would not visit new customers either.

In summary, the workshop only partially succeeded in
instructing the officers in contingency analysis. Generally, the author conducted the analysis by interviewing the officers in a rather nondirective fashion. However, it was apparent that many of the operant principles were understood by most of the officers and they were quick to identify aversive control, an absence of reinforcers, poor schedules and the like once the analysis was underway.

It would appear that contingency analysis is a valuable component of OBM but that where possible, analysis interviews should be augmented by empirical observation of contingencies during baseline. Had this approach been employed in the case studies several interventions might have been modified before implemented, and perhaps been more effective.

Were the officers able to develop, implement, and interpret applied behavior analysis designs?

The manual used in the workshop outlined several considerations in developing an applied behavior analysis design. Ten techniques were presented for specifying a target behavior to be observed and counted during the baseline and intervention phases. These techniques including observing the terminal performances directly, permanent products of the performance, social products of the performance, tokens, counting the number of employees performing rather than the rate of an individual performance, measuring duration, latency, intensity or some performance dimension, other than rate, observing a topographic
approximation to the terminal performance, observing incompatible behaviors, counting opportunities for a performance to occur, and employing one of the above techniques to observe a group product or performance.

Five observation techniques were presented and were direct observation, behavior coding, automated recording, self-reports, and peer reports. Performance recording could be accomplished through a "running account" in which all behaviors were noted in log form, continuous recording of a target behavior, or time sampling in which behavior was observed at fixed or variable intervals throughout the day. Specific performances could be observed using either event recording in which each occurrence of the target is counted, interval recording in which a check is made if one or more instances of the behavior occur in a particular interval, or percentage recording where a performance can only occur in a specific situation.

The most accurate combination of these techniques would likely be direct observation of terminal behaviors or their products using continuous event recording. However, this approach requires constant monitoring and is often infeasible in applied work. A common approach has been to employ sampling, rather than continuous observation, and interval recording rather than event. These techniques don't require precision observation, or constant monitoring, and are more practical for applied observation.
For the nine studies a variety of techniques were employed. Table 12 below summarizes the different procedure used by the officers.

Table 12

Summary of Behavioral Specification, Observation and Recording Techniques Employed by the Officers in Their Interventions

<table>
<thead>
<tr>
<th>Case</th>
<th>behavioral specification</th>
<th>observation technique</th>
<th>recording technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>permanent products</td>
<td>automated</td>
<td>event percentage</td>
</tr>
<tr>
<td>2</td>
<td>social products</td>
<td>direct</td>
<td>time sampling</td>
</tr>
<tr>
<td>3</td>
<td>permanent products</td>
<td>automated</td>
<td>continuous event</td>
</tr>
<tr>
<td>4</td>
<td>permanent products</td>
<td>automated</td>
<td>continuous event</td>
</tr>
<tr>
<td>5</td>
<td>performance latency</td>
<td>direct</td>
<td>continuous event</td>
</tr>
<tr>
<td>6</td>
<td>group terminal performance</td>
<td>direct</td>
<td>continuous event</td>
</tr>
<tr>
<td>7</td>
<td>permanent products</td>
<td>automated</td>
<td>continuous event</td>
</tr>
<tr>
<td>8</td>
<td>performance latency</td>
<td>direct</td>
<td>event percentage</td>
</tr>
<tr>
<td>9</td>
<td>group terminal performance</td>
<td>self-reports</td>
<td>continuous event</td>
</tr>
</tbody>
</table>

The most frequently employed behavioral specification technique was permanent products (4 cases). Second was performance latency (2), or group terminal performance (2), followed by a single instance of social products specification. The most frequent observation techniques were automated (4), or direct (4), followed by a single instance self-reports. By a large margin continuous event recording (6) was most used, followed by event percentage
recording (2), and one instance of time sampling.

The observation of performance products continuously, either directly or through automated techniques, is a considerable contrast to techniques employed in clinical and educational applications where self-reports, or direct observation, are often sampled through interval recording. The highly objective and quantifiable data analyzed by the officers would be a rare luxury for clinical practitioners. The major technological distinction that allows for such precise data collection is the computer. All transactions are stored in the computer, often daily. The author was further informed that any data not currently inputted to the computer could be with only moderate effort, since terminals are located throughout the bank and branches.

This resource offers the applied behavior analyst almost limitless alternatives. Speculating, the author projects a future application in which key performance products are tracked on-line by the computer. Programs could be developed that allow the computer to monitor key performances relative to organizational and departmental objectives. It would not be completely unrealistic to assume performance objectives for specific employees or positions could also be monitored. Correlational programs could be developed to assess whether decreases in some key performance rates might relate to changes in other rates thus, allowing a total systems approach to employee performance modification and
assessments. Performances that do not produce products could be keyed into the computer from observation taken by supervisors or from self-reports. Perhaps, even intervention costs could be supplied to the computer which would allow a real-time cost-benefit analysis of each intervention. The author has developed a computer simulation of this sort of analysis and finds it a potentially useful approach to periodically assessing the benefit of an intervention.

These possibilities have been explored with the executive vice president and data processing officer, and the possibility of designing and implementing the above system is encouraging. In the discussion, the feasibility of including customers in the system was also discussed. For example, variable ratio "bonuses" could be programmed in the "automatic tellers" to increase customer utilization. Of course, any such system would be quite complex to design and numerous unforeseen obstacles are anticipated.

In addition to the practicality and utility of behavior analysis techniques, the author was concerned with the ability of the officers to develop applied behavior analysis designs, and to use the designs to make decisions as to whether to intervene, whether to continue an intervention, and to assess the effectiveness of an intervention.

Case One attempted a multiple baseline across subjects. Two major design errors were discovered. The interventions were not staggered and the loan officers' performances
were grouped and plotted as an average. Decision making was technically incorrect on two accounts. Subjects' 5 and 6 were performing at standard during baseline and no intervention should have been attempted. Secondly, the large variability present in most of the records, and the presence of positive trends, would counterindicate any intervention. An attempt should have been made to determine the source of the variability and control it. Finally, the officer focused on profits realized over the two phases, almost exclusively, which detracted from his technical analysis.

If variability could not have been controlled, statistical tests might have been employed to analyze the data since the high variability obscured a visual inspection analysis. Too few data points were available for many tests. Perhaps the Revusky "Rn" test (1967) for multiple baseline designs would have assisted in assessing the effects of the intervention. However, the test requires staggered intervention and randomized introduction of interventions, both of which were violated in the design utilized. In the future, high variability baseline or complex trends that cannot be experimentally controlled would indicate attention be given to statistical designs. The earlier criticism of this approach that managers would lack the skills or resources to employ statistical approaches could be addressed by providing training to the in-house consultant in the designs.
or by providing statistical packages for the organization's computer with the novice in mind.

**Case Two** employed an A-B withdrawal design with an extended baseline. The design was employed correctly though there were problems with the observation specification and sampling procedure. The officer intervened despite a positive trend in baseline which suggests he failed to employ the design as a decision making device. However, a problem common to all the cases was that several officers were reluctant to change the procedures or designs for fear they would damage the author's research. This unanticipated concern of the officers may have meant they often interpreted the baseline data correctly but didn't make the modifications indicated due to their misunderstanding of the author's intentions.

The officer assessed the intervention as having had a small positive effect. Based on visual inspection this was a reasonable interpretation. However, the 60 data points allowed for a time series analysis (e.g., Gottman, 1973) which, had the resources been available, might have confirmed the inspection or led to a different interpretation.

**Case Three** was to employ a reversal design but instead conducted an A-B withdrawal design. The design was conducted properly with the exception the officer charted the performance in a confusing fashion that resulted in a difficulty in interpreting the data. Generally, graphing was difficult for many of the officers and future workshops
should stress both the construction and interpretation of graphic data.

The officer failed to identify the cyclic performance in baseline and did not attempt to experimentally control it. He was generally unable to assess the data due to the confusing graphs and high variability. However, in the final interview he did express a concern for the cycles and attributed them to cycles in the number of items to be proofed. The author's general impression was that the officer failed to see much value in OBM given his choice of performance objectives, failure to employ the reversal design he specified, and failure to carry out the behavior modification intervention developed in the consultation. Although sufficient data points were available for a statistical analysis, it is unlikely the officer would have conducted one even if the resources were available.

Case Four utilized a reversal (A-B-A-B) design satisfactorily. He failed to note, however, a positive trend in the first phase, or to modify the intervention when performance decreased in the intervention. Also, although he described several confounding variables throughout the phases, he did not extend baseline until the variables were controlled. Sixty data points were provided in the study which would have allowed for a time series analysis, but visual inspection of the phases seemed sufficient to indicate the performance objective was not realized.
Case Five applied an A-B-A reversal design satisfactorily. His decision to continue the intervention was supported by a visual inspection of the graph but the high variability in baseline should have been experimentally controlled or baseline extended before intervening. He accurately assessed the intervention as unsuccessful, despite the beneficial organizational effect, and quite properly suggested the previously mentioned problems with covert initial baselines. However, he demonstrated little concern for the high variability in the first two phases or curiosity about the apparent reduction in variability in the second A phase. With only 35 points a time series analysis would have been questionable but an ANOVA corrected for autocorrelation might have proven valuable if resources permitted.

Case Six employed an A-B-A reversal design in an acceptable fashion. The decision to continue intervention was supported by the data and the officer's interpretation of the intervention as successful was validated by the reversal design. His concern that the final B phase of the original A-B-A-B design was contaminated was also a valid one. In many ways, the data processing officer appeared to the author to be the most skillful of the officers in his utilization of applied behavior analysis. This may, in part, be attributable to his training and experience in data processing.

Case Seven attempted a multiple baseline across
subjects but failed to stagger the interventions resulting in a collection of A-B withdrawal designs. The fact that both attempts at multiple baselines were performed, incorrectly suggests to the author that instruction may have been the problem rather than an inability on the part of the officers to properly conceptualize the design.

The officer did not employ the baseline as a decision making device since all four subjects were above standard in baseline. The intervention should not have been implemented and new subjects baselined. The officer displayed an understanding of this issue in the final interview but was unfortunately under the impression that the author's research required an intervention on the originally selected subjects.

Case Eight officers, due to a lack of time, conducted an A-B withdrawal design in acceptable fashion. Despite a favorable reduction in performance latencies they interpreted the data as providing little evidence for a significant effect due to several uncontrollable variables that had a substantial effect on performance. Generally, the officers demonstrated a good understanding of applied behavior analysis principles and techniques and their failure may be primarily attributed to a poor contingency analysis prior to the design of the analysis.

Case Nine employed an A-B-BC design although no such design was intended. Several problems were present in the conduct of the design. First, in the B phase two
interventions were introduced simultaneously thus obscuring the independent contributions of either intervention. Secondly, a positive trend was present in the B phase and the phase should have been extended to more fully assess the trend. Finally, a third intervention was introduced without a subsequent return to the B phase (A-B-BC-B) which is recommended for testing interaction effects by Hersen and Barlow (1976, p. 214). Ideally the three treatments would have been assessed by an A-B-A-B-C-B-C-D-C-D design or for interactions by, perhaps, an A-B-A-B-BC-B-BC-BCD-BC-BCD design. In any event, it is quite possible either one of the initial interventions independently would have accomplished the performance objective obviating the need for more complex designs.

Table 13 summarizes the results of the cases and describes the designs employed, and, in the author's opinion, whether they were conducted essentially correctly, whether they are employed as decision making techniques, and whether they were accurately assessed by the officer's visual inspection. A plus indicates the author's judgment that a particular component was conducted properly while a minus indicates the component was not conducted properly.
Table 13

Summary of Applied Behavior Analysis Designs Employed by the Officers and the Author's Judgments Regarding the Accuracy of Design Application, Decisions to Intervene and Intervention Assessments

<table>
<thead>
<tr>
<th>Case</th>
<th>analysis design</th>
<th>accuracy of design application</th>
<th>accuracy of decision to intervene</th>
<th>accuracy of assessment of intervention</th>
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<tr>
<td>1</td>
<td>A-B²</td>
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<td>2</td>
<td>A-B (ext.BL)</td>
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<td>A-B</td>
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<td>4</td>
<td>A-B-A-B</td>
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<td>9</td>
<td>A-B-BC</td>
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percent cases judged accurately applied  
56% 33% 67%

1. Several officers may have incorrectly elected to intervene because they thought this would contaminate the author's research if they did not

2. These A-B designs were inaccurate because they were not staggered which may be due to poor instruction

3. "-" indicates the author judged this component inaccurately applied

4. "+" indicates the author judged this component accurately applied
Were the officers able to apply behavior modification techniques successfully? Altogether, the response to this question would be negative. This is understandable for several reasons. A substantial literature exists that supports the utility of reinforcement procedures, punishment, shaping, fading, modeling, and so on in a wide variety of settings and with a wide variety of subjects. The author's chief concern was to explore the viability of organizational objectives, cost-benefit analysis, contingency analysis, and especially applied behavior analysis as they might apply in an OBM program. This emphasis undoubtedly was conveyed to the officers as evidenced by their negative survey ratings of the techniques and the rather naive behavior modification techniques employed in the intervention.

Additionally, only one session was available for a discussion of these techniques, which was hardly adequate. For example, in the author's college technical program 160 hours of instruction are dedicated to these techniques in addition to field experiences. Another instructional deficiency was the workshop manual which did not provide structured practice or simulations in the application of behavior modification techniques. Finally, many of these techniques (e.g. shaping) require a great deal of experience to be conducted successfully.

Perhaps, a future compromise would be to select for inclusion in the workshop only those techniques that are well
documented and especially relevant in organizational settings. A tentative list might include techniques for assessing reinforcers for individual employees, positive reinforcement procedures, intermittent schedules, differential reinforcement of other behavior (DRO), punishment, extinction, response-cost, prompting, fading, and shaping. A revision of the workshop manual based on this list is planned.

Is the Workshop, Consultation, and Six Phase Program a Practical and Effective Approach to Implementing OBM in an Organization?

In conclusion, it is recommended, based on this study and previous experiences, the following strategy be employed. Hopefully, a test of this approach will be possible for the author in the near future. The approach presented in the study was considered partially successful.

1. Develop organizational and departmental objectives through a series of consultations with upper management and departmental managers. Or, if a system exists evaluate its applicability to OBM. Perhaps, the MBO approach is most suitable overall. Include organizational objectives and incentives for conducting OBM intervention.
2. Through discussions with departmental managers, supervisors, and employees identify and specify key performances for each departmental objective. This process should be conducted in individual departmental meetings subsequent to the establishment of departmental objectives. A short workshop in each department or, in small organizations across departments, should be conducted on behavioral specifications prior to identifying and specifying key performances.

3. An OBM workshop should be conducted off-sight for departmental managers. Instruction would include the performance cost-benefit analysis, contingency analysis, applied behavior analysis, and select behavior modification techniques.

4. Brief workshops for departmental supervisors would be conducted and would include each department manager as an instructor. To insure the contingencies for the supervisors are established for conducting OBM intervention, they should be explained to the supervisors by the manager of the department.

5. A system should be developed for reporting OBM plans and results throughout the
organizational hierarchy. This is to insure contingencies are maintained for OBM interventions and to prevent implementation of unbeneﬁcial or competing interventions.

6. An employee should be designated as an OBM consultant who would assist in the design, implementation, and assessment of interventions. This individual would be provided additional training and would be responsible for keeping abreast of the OBM literature. Further, he would assist in implementing complex designs or statistical treatment of data.

The author believes this approach would substantially correct many of the deﬁciencies in the present study. The present study was considered successful in accomplishing its limited exploratory objectives. The several analyses applied in the bank proved difﬁcult and complex, as expected, but the author's belief that they hold promise for a management technology for modifying employee performance was strengthened.
Please rate each of the following OBM principles or technique using the categories provided. The purpose of this survey is to improve the program by expanding discussion of important but difficult topics and reducing or eliminating discussion of easily understood or less useful topics. This is not an evaluation of the instructor, but of the concepts and techniques themselves. So, feel free to rate negatively those topics you felt had little direct usefulness to your management objectives with regard to employee performance. Similarly, rate positively those concepts or techniques you feel could have benefits if you understood them better or do understand and use them now.

**Topic Complexity and Instruction Time**

Some of the topics may have been quite new and unfamiliar and therefore difficult to understand or use with such a brief exposure to them. Disregarding how you felt about the topic's usefulness, please rate it solely on how much time should be allotted in future workshops to gain a full understanding of the topic. Use the rating scale below and where possible I would appreciate your comments about why you rated the topic the way you did.

Compared to the other topics in the workshop I found this one:

5 = very difficult to understand - will require extensive discussion or practice

4 = above average difficulty - requires more than average discussion or practice

3 = average difficulty - should be discussed or practiced the same amount as most of the other topics

2 = less than average difficulty - requires less time than most to understand

1 = little difficulty in understanding - brief discussion or text sufficient

**Topic's Practical Usefulness**

Compared to other concepts and techniques I have been taught in other workshops/college, etc. on how to motivate employees and specify performance goals I found this topic:
5 = One that will have considerable use in analyzing and/or solving employee performance problems

4 = One that will have a good deal of use in analyzing and/or solving employee performance problems

3 = One that will have some use in analyzing and/or solving employee performance problems

2 = One that will have little use in analyzing and/or solving employee performance problems

1 = One that will have no use in analyzing and/or solving employee performance problems

Please write your comments about why you rated the topic as you did where possible. Space is provided below each item. If you follow the page numbers in your workbook it will help remind you of some of the topics and exercises.
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| Difficulty | Usefulness | Description
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<td>9.</td>
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