Variables Related to the Effectiveness of Instructions: A Theoretical Analysis of Experimental Results

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VARIABLES RELATED TO THE EFFECTIVENESS
OF INSTRUCTIONS: A THEORETICAL
ANALYSIS OF EXPERIMENTAL RESULTS

by

Stephen Paul Enge

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
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Stephen Paul Enge
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WESTERN MICHIGAN UNIVERSITY, M.A., 1980
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CHAPTER I

INTRODUCTION

In most organizations the manager's major function is to facilitate the performance of the staff. This emphasis prevails in organizational behavior management (OBM) research. Prue, Frederiksen, and Bacon (1978) report, in their review of OBM literature, that the task completion section of their bibliography contains the largest number of references. OBM researchers have studied a variety of techniques to facilitate task performance; three general techniques predominate—instructions, feedback, and contingent reinforcement—as indicated in recent reviews (Prue, et. al., 1978; Loeber and Weisman, 1975). Of the three, researchers have most frequently studied feedback, usually in conjunction with previously provided instructions.

The lower cost involved with feedback and instructions relative to the cost involved in many contingent reinforcement procedures may be one of the reasons for this emphasis on instructions and feedback. This tendency to use lower cost procedures is a result of contingencies present in most organizations which may cause only a limited amount of the total resources to be used in facilitating the productive use of the balance of the resources. In turn, this often decreases the amount of reinforcement available for task performance. As a result, managers may turn to the use of feedback and instructions, which may seem to the manager to have high initial costs but lower recurring costs.
In any case, feedback and instructions are often used; of the two, instructions seem to be a secondary concern to researchers, and perhaps even neglected as an area of concern. In her recent review, Krumhus (1978) says that:

Researchers generally attempt to control for the instructional effects of the feedback stimulus by including an "instructions control procedure" . . . instructions are generally found to be less effective than feedback . . . (p. 5)

She goes on to suggest that instructions were often less effective because of the researcher's failure to construct their instructions as well as their feedback

. . . for example, feedback was often more specific than instructions, i.e., feedback was more likely to refer to the specific characteristics of the target response . . . (p. 6)

For the purpose of further discussion, I shall define instructions here as discriminative stimuli which contain at least a description of the behavior to be performed, and at least implicitly, the antecedent conditions under which the behavior is to be performed; such instructions are fragmentary rules (Skinner, 1969). Instructions which also contain a description of the consequences which follow the performance of the behavior are complete rules (Skinner, 1969). Instructions may be either written, oral, or modeled. As defined here, they may include such techniques as written instruction manuals (Koegel and Rincover, 1977), inservice-training sessions (Jones, Fremouw, and Carples, 1977; Jones and Eimers, 1975; and Andrasik and McNamara, 1978), job descriptions (Bourdon, 1977), oral instructions (Rule, 1973), and modeling (Gladstone and Spencer, 1977).
They exclude such techniques of antecedant control as the use of cues or prompts during ongoing performance (Van Houten and Sullivan, 1975), since such techniques often consist only of antecedant specification and/or very minimal behavior description.

In addition to the degree to which instructions are complete another dimension of instruction is that of the degree of detail. As Krumhus indicated above, the effectiveness of instructions may often be related to the degree of detail, or specificity, with which they describe the behavior. This variation in specificity is not limited to the description of the response; the detail with which instructions describe other rule components may also vary.

It seems that the way in which researchers use instructions is somewhat related to the completeness and/or detail of these instructions (or vice versa). In reported research, general (less complete and/or detailed) instructions are often the initial intervention, or baseline condition, against which the researcher compares subsequent interventions. On the other hand, specific (more detailed and/or complete) instructions are often used as a major intervention compared to some pre-instructions baseline condition.

In some cases, instructions have been effective for increasing and/or maintaining general task performances (Pommer and Streeback, 1974; Shook, Johnson, and Ulhman, 1978), and in staff training applications (Broden, Copland, Beasley, and Hall, 1977). Under some circumstances researchers have found the effects of instructions to be relatively weak (Epstein and Wolff, 1978; Kirigin, Ayala, Braukmann,
Brown, Minkin, Phillips, Fixsen, and Wolf, 1974), inconsistent, (Clark, et. al., 1973), transitory in nature (Pommer and Streedback, 1974), or ineffective (Andrasik and McNamara, 1978; Panyan and Patterson, 1974). There seems to be no discernible relationship among whether instructions are general or specific (more detailed and/or complete), the order in which researchers present general and specific instructions within the experimental design, and whether the instructions are effective.

Because managers are concerned with the effectiveness of their activities, they should find guidelines for the use of instructions to be helpful, since instructions seem to be more effective under some conditions than others, and since researchers may have somewhat neglected instructions. Such guidelines for the effective use of instructions may be derived from analyses of the mixed results seen in reported research.

In the following experiments, the research questions were not focused primarily on the conditions under which instructions are effective. However, in both experiments, there were differential effects of instructions across subjects within experiments, as well as across experiments. Thus, we may discuss the results of the experiments in terms of an analysis of the conditions under which instructions are effective. Following brief summaries of the experiments, the author will discuss their results, submit the results to analyses and derive some guidelines for their effective use.
CHAPTER II

EXPERIMENT I - SUMMARY

The purpose of this experiment was to develop a task analysis of general behavioral teaching skills and a method of measuring those skills, and to teach those skills to undergraduate students. Basic instructions were used as a baseline condition, detailed instructions were used as the first intervention, and a feedback package was used as the final intervention. Following is a brief summary of Experiment I, which is included in its complete form in Appendix A.
Method

Subjects. Three undergraduate students enrolled in the laboratory section of an applied behavior analysis course served as subjects.

Setting. The students worked with multiply handicapped children, carrying out pre-academic training, using direct instruction format procedures in 6' x 6' closed training booths.

Dependent Variables. Two components from a task analysis of teaching skills served as dependent variables: presentation of attending S^D's and/or task commands (trial S^D's); and reinforcement delivery. Correct trial S^D presentation consisted of the following:

1. Therapist presents an attending S^D or task command only, if the child is not engaged in disruptive behavior.
2. Therapist presents the attending S^D ("(child's name), look!") if the child is not attending.
3. Therapist presents the task command when (and only when) the child is attending. The task command is clear, i.e., has a clear onset and offset, and consists of the same specified word or phrase on each trial.

Correct reinforcement delivery consisted of the following:

1. Therapist delivers the reinforcement contingent only on a correct response by the child (as defined in the child's procedure description).
2. Therapist delivers the reinforcement immediately (within 1 second) after the correct response.
3. Therapist describes the response being reinforced.
4. Therapist praises child for making the correct response.
5. Therapist makes physical contact with the child.
6. Therapist delivers the reinforcer prescribed in the child's procedure description.
7. Therapist makes these responses only in the order described.

Measurement. Trained observers viewed training sessions via a closed circuit TV system, and recorded child and therapist responses on a data sheet based on a flow charted task analysis of the teaching techniques being used. Reliability observers viewed randomly selected video tape records of training sessions, and the experimenter calculated Type II reliability: \[ \% \text{agreement} = \frac{\text{agreements} \div (\text{agreements} + \text{disagreements}) \times 100. \] Reliability averaged 94% agreement, ranging from 83% to 100%.

Independent Variables. The experimental conditions included basic instructions, detailed instructions, and a feedback package. The basic instructions included written client training-procedure, supplemental oral explanations, and periodic feedback via a skill checklist. This was all implemented by school personnel.

The detailed instructions consisted of written material which included the technical term associated with a skill, a description of the correct form of the response, a behavior analytic rationale for the response form, and examples and non examples of the correct response form. The experimenter gave tests and retests until subjects passed a test at 100% mastery of the response form prescriptions.

The feedback package consisted of initial praise for good
performance of non target behaviors, descriptive praise for improvement of the target behavior, descriptions and models of correct and incorrect forms of the target response, rationales for the correct response forms, a question answering routine, and final praise for working to improve therapy skills.

**Experimental Design.** The experimental design consisted of a multiple-baseline-across-responses nested within a multiple-baseline-across-subjects design. The experimenter introduced the independent variables at different times for different dependent variables within subjects for both dependent variables, and at different times across subjects for the dependent variable of reinforcement delivery only.
**Results**

Figures 1, 2, and 3 show the results of this experiment. The effects of the basic instructions were small, with none of the subjects reaching acceptable levels of performance. There were no discernible improvements in performance following the periodic feedback provided by school personnel during this condition.

The detailed instructions had mixed effects. Subject 2 showed improvement in performance across both dependent variables, while Subjects 1 and 3 showed no improvement.

The feedback package improved performance of $S^D$ presentation for all three subjects. The feedback package was not implemented for any of the subjects' reinforcement delivery, due to the end of the subjects' academic year.
Figure 1

Graphs of the conditional probability (cp.) of correct $S^D$ presentation, for Subject 1 (S1), Subject 2 (S2), and Subject 3 (S3), across the experimental conditions of General Instructions; Detailed Instructions (Detailed Inst.), and Feedback Package (Feedback).

Note: The arrows above the plots in the General Instructions conditions indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
Figure 2

Graph depicting the conditional probabilities (cp.) of correct $S^D$ presentation and correct reinforcement ($S^{R+}$) delivery, for Subject 1, across the experimental conditions of General Instructions, Detailed Instructions (Detailed Inst.), and Feedback Package (Feedback).

Note: The arrows in the General Instructions condition indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
Figure 2

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Figure 3

Graphs depicting the conditional probabilities (cp.) of correct $S_D^D$ presentation and correct reinforcement ($S_{R+}^R$) delivery, for Subject 2, across the experimental conditions of General Instructions, Detailed Instructions (Det. Inst.), and Feedback Package (Feedback).

Note: The arrows in the General Instructions conditions indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
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Discussion

The low performance levels seen in the basic instructions condition, and the improved performance of at least one subject in the detailed instructions condition suggest that at least under some conditions, detailed instructions were effective for both dependent variables for one subject, and ineffective for the other subjects, differences among subjects may have been responsible for the variable results, rather than the nature of the instructions. In the following experiment, detailed instructions were more effective, but with similar variability across subjects.
CHAPTER III

EXPERIMENT II - SUMMARY

The purpose of this experiment was to examine the effects of a required observing response on the collection, reviewing, and reporting of client data by workers in a community mental health center. The working hypothesis was that an increase in the subjects' attending to specific aspects of client data during the reviewing process might result in improved data collection and/or data reporting.

Basic instructions were used as the baseline condition, detailed instructions were used as the first intervention, and feedback memos were used as the final intervention. There was a general similarity between Experiment I and Experiment II, in the use of basic instructions, detailed instructions, and feedback. However, there were also some significant differences, particularly in the area of the conditions under which the instructions were given. Some of the major differences were:

1. The subjects' past histories were more dissimilar than those in Experiment I.
2. There were consequences for task performance established within the setting.
3. A manager rather than researcher gave instructions in all conditions.
4. The kind of behavior specified in the instructions was similar to behavior already being performed by them in
the setting.

5. Instructions were more formally given, and signed for. The context of the study was program evaluation rather than research.

The effects of instructions in this experiment were variable, across responses within each subject, across subjects within conditions, and across conditions; overall, however, instructions seemed to be more effective in this experiment than in Experiment I. Thus, we may discuss the method and results of this experiment in terms of the conditions under which instructions are effective. Following is a brief summary of Experiment II, which is included in its complete form in Appendix B.
Method

Subjects. Four mental health workers in a community mental health center served as subjects. They had a range of 1 to 7 years experience in human services settings, and had a variety of educational backgrounds in the area of psychology.

Setting. A day treatment program in a community mental health center served as the setting of this study. In this program, a behavioral staff management system was in effect, in which tasks were specified, observed, and followed by specified consequences.

Dependent Variables. The dependent variables consisted of tasks related to the maintenance of the client data system. These tasks included the collection (on data sheets), review (of data sheets), and reporting (in anecdotal case notes), of client data in two areas—daily case note data (client behavior) and a client grooming checklist. The subjects recorded data daily, and reviewed and reported data weekly.

Measurement. On a daily basis, a trained observer reviewed all data forms completed by the subjects during the previous day. She recorded occurrences and non-occurrences of the various tasks, using a criterion sheet as a guide. The experimenter conducted reliability observations and recorded his findings for a randomly selected sample of one fifth of the permanent products reviewed by the primary observer. He then computed Type II reliability: $\%$ agreement = agreements $(agreements + disagreements) \times 100$. Reliability averaged 96% agreement, ranging from 93% to 100%.
The detailed instructions consisted of memos which explicitly specified the required components of each of the tasks. These instructions listed all the spaces and blanks on the data forms, indicated what kind of information should be inserted, and under what circumstances it was to be inserted.

In the feedback memo condition, subjects received memos which indicated their performance levels for the current target response.

The experimental design consisted of an ABC design replicated across four subjects with six responses per subject. The condition changes occurred at the same time for each subject.
Results

Figures 4 and 5 show the results of this study. The effects of the general instruction condition were mixed, with performance levels ranging from low to high across responses within subjects, and across subjects. Most performance levels were low to moderate.
Figure 4

Graphs of the performance levels for Subject 1 (S1) and Subject 2 (S2) in terms of the % correct component responses for: Client Grooming Checklist Reporting (CGCL REP), Reviewing (CGCL REV), and Reporting (CGCL REP); and Daily Case Note Data Recording (DCND REC), Reviewing (DCND REV), and Reporting (DCND REP). The experimental conditions are General Instructions (GI), Detailed Instructions (DET INS), and Feedback Memos (FEEDBACK).

Note: The solid condition change lines between DET INS and FEEDBACK indicates that FEEDBACK was implemented directly only for CGCL REV; the dotted condition change lines are added to assist assessment of any correlated effects.
Graphs of the performance levels for Subject 3 (S3) and Subject 4 (S4) in terms of the % correct component responses for: Client Grooming Checklist Reporting (CGCL REP), Reviewing (CGCL REV), and Reporting (CGCL REP); and Daily Case Note Data Recording (DCND REC), Reviewing (DCND REV), and Reporting (DCND REP). The experimental conditions are General Instructions (GI), Detailed Instructions (DET INS), and Feedback Memos (FEEDBACK).

Note: The solid condition change lines between DET INS and FEEDBACK indicates that FEEDBACK was implemented directly only for CGCL REV; the dotted condition change lines are added to assist assessment of any correlated effects.
Figure 5

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The effects of specific instructions were somewhat more consistent, with most subjects improving their performance of most tasks to some extent. The major exceptions were for those tasks for which performance was already at moderate to high levels. For several tasks for three of the subjects, downward trends toward the end of the condition were seen for several tasks, after initial increases. None of the subjects maintained high and stable levels of performance in this condition.

The feedback memo condition was implemented for only the dependent variable of reviewing client grooming checklist data, in order to assess the effects of any increase in this (observing) response on the performance levels of the other responses (this was to be only the first of two such interventions). This intervention was implemented for only three of the four subjects; Subject 3 was dropped from the study at this point due to his re-assignment to a different program. Two of the remaining three subjects achieved high and stable performance in this condition, not only for the target response, but also for the other dependent variables which had not been intervened upon directly. The third subject's performance of the target response and two other responses increased; however, he did not achieve high and stable performance levels for any of the responses.
Discussion

The basic instructions condition was at least partially effective for some subjects, possibly due to the contingencies present in the staff management system of the setting. The detailed instructions condition was effective for all subjects for at least some of the responses, but with variability across subjects. This again suggests that differences among subjects affected their responses to the instructions. The effects of the feedback memos on non-target responses may be seen as support for the hypothesis that an increased observing response in the form of data reviewing might increase data collection and reporting; however, it also suggests that generalized instruction following was strengthened when consequences were provided for a particular instance of instruction following.

In the following general discussion, the author will analyze the results of this experiment as well as those of Experiment I, and will attempt to derive some rules which describe the conditions under which instructions are effective.
CHAPTER IV

DISCUSSION

Instructions had mixed effects in these experiments. In Experiment I (the staff training experiment), general instructions had little effect, while in Experiment II (the staff management study), they had some effect for some subjects for some responses. Detailed instructions were effective for Subject 2 in the staff management experiment but ineffective for the others, while detailed instructions were at least partially effective for all the subjects in the staff management study. However, detailed instructions seemed to be more effective for Subject 2 in the staff training experiment than for any of the subjects in the staff management study, both in producing change in performance from the previous condition and in reducing variability of performance. Also, detailed instructions had differential effects across subjects in the staff management study in the amount of change, variability, and/or trends within conditions. Furthermore, detailed instructions had differential effects across behaviors for at least one subject.

The extreme variability of the effects of instructions across situations, subjects, and responses needs to be analyzed in order to derive tentative rules regarding the circumstances under which instructions may be expected to be effective.

Instructions as Rules

Instruction following behavior may be a form of rule control (Skinner, 1969). Skinner defines a rule as a statement that describes
the topography of a response, an antecedant event or condition, and
the consequences which would occur if the response were emitted after
the specified event or under the specified conditions. Instructions
which contain all three of these components may be said to be complete
rules, while instructions which contain only some of these components
are fragmentary or incomplete rules (Skinner, 1969).

Completeness of Rules

We might expect complete rules to often be more effective than
incomplete rules in controlling behavior. In the general instructions
condition of the staff management study, subjects received brief memos
which instructed them that the completion of these data forms was a
recurring task (a routine, repetitive duty for which a staff manage­
ment system provided standard consequences), and that "... these
sheets are to be turned in daily ... a sample of this check list is
attached." In the detailed instructions condition, the subjects
received memos which specified the antecedants (specific parts of the
form) and responses (information to be recorded in these specific parts)
which were involved in the satisfactory completion of the forms. In
the general instructions condition, consequences were implied in the
assignment of recurring tasks; however, the instructions named, but did
not describe, specific topographies of the responses and antecedants.
In the detailed instructions condition, the instructions described the
topographies of the responses and antecedants in detail. This differ­
ence might have been related to the increased performance seen in the
detailed instructions condition.
In Experiment I, the limited specification of the antecedent-response components of a rule which were given in the general instructions condition may have been related to the increased effects of the detailed instructions for Subject 2. The instructions the KVMC staff gave to the subjects during the general instructions condition included the basic antecedent-response components, e.g., "when the child makes the correct response, reinforce him." On the other hand, the written instructions given to the subjects at the beginning of the detailed instructions condition contained much more specific descriptions of the various antecedent conditions and the specific topographies of the desired responses, in terms of the sequence of component sub-responses, and in terms of the contents of such sequences. For example, the description of reinforcement delivery included the following:

If the child does make the correct response, you should immediately deliver reinforcement with the elements of the . . . chain delivered in the following order: . . . describe the correct response the child made . . . praise the child for making the response . . . deliver tactile stimulation . . . deliver primary or strongly conditioned secondary reinforcer . . .

This difference in detail might be one of the variables responsible for the increase in performance shown by Subject 2 in the detailed instructions condition. This inference might be weakened by the lack of effects for Subjects 1 and 3, but replication across responses demonstrated the effectiveness of detailed instructions for Subject 2. This suggests that additional variables might account for the lack of effects for Subjects 1 and 3; such variables will be discussed later.

Even when the three components of a complete rule are present in a given set of instructions, the detail with which the instructions
describe each of the components may affect the degree to which they are effective in evoking the desired response. In her review of the literature on feedback, Krumhus (1978) reports that:

Researchers generally attempt to control for the instructional effects of the feedback stimulus by including an "instructions control procedure" . . . instructions are generally found to be less effective than feedback . . ." (p.5)

She goes on to suggest that the instructions were less effective because they were not as specific as the feedback:

. . . for example, feedback was often more specific than instructions, i.e., feedback was more likely to refer to the specific characteristics of the target response . . ." (p. 6)

The use of examples and non-examples to clarify the content of rules may increase the specificity of rules. Homme and Glaser (1959) suggest that instructions are best given in a rule-example format, in which rules are given in conjunction with examples and non-examples.

From this discussion of the completeness and specificity of rules we may derive the following rule:

When giving instructions, they will be more effective if you 1) give them in the form of complete rules (i.e., include descriptions of the antecedant behavior, and consequence), and 2) describe the components as specifically as possible, using examples and non-examples when possible.

It should be noted that there are some cases in which incomplete rules may be as effective as complete rules. These are those situations in which the antecedant and/or consequence components of the rule are strongly implicit in the conditions under which the rule is given. For example, when giving a series of instructions on how to operate a piece of machinery, it is probably not necessary to include the consequence after each rule, e.g., "pull level C, (and the machine will operate)".

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Similarly, when indicating which one of several switches operates the lighting in a particular section of a large room, it is probably not necessary to include the antecedant, e.g., "(when section B of the room is dark), push button B". However, such a case may not necessarily constitute an exception to the preceding rule. If the response described by the instructions occurs under the appropriate antecedant conditions (which were not described), we may infer that the antecedant specification was inherent in the conditions under which the instructions were given. Similarly, if the response appears quickly with a high probability prior to contact with any consequences, we may infer that the specification of some effective consequence was inherent in the conditions under which the instructions were given (such an inference might be weaker than one regarding implicit antecedant specification).

From this discussion of the effectiveness of incomplete rules, we may derive the following rule:

When instructions are given in the form of incomplete rules, the instructions will be more effective if you make certain that the missing rule components are strongly implicit in the conditions under which you give the instructions.

The Observing Response

Another variable related to the effectiveness of instructions is that of whether the person receiving the instructions actually makes an observing response. This, in turn, may be related to the person's reinforcement history, the nature of the instructions, and so on.

Krumhus (1978) has suggested that:
The strength of the observing response, in general, is related to the conditioned reinforcing properties of the discriminative stimulus, and the reinforcement schedule with which it is associated. (p. 49)

Galizio (1979) has shown experimentally that "instructional stimuli . . . can be . . . the source of reinforcement for the observing response"; he also indicates that the accuracy of the instructions may affect the strength of the observing response:

The elimination of observing when the instructions were no longer accurate shows that instructions were reinforcing only when . . . behavior was under instructional control. (p. 67)

In the staff management study, the variability of the effects of the detailed instructions may have been partially related to varying observing-response strength across subjects. Some subjects may have read the instructions more carefully and completely than others. Although subjects dated and initialed a memo reading checklist, that procedure directly demonstrated neither an observing response nor acquisition of the instructions.

From this discussion of the importance of the observing response, we may derive the following rule, and a corollary of that rule:

When giving instructions, they will be more effective if you require the people demonstrate their observation and learning of the instructions by actively and accurately verbalizing the instructions.

When giving instructions, people are more likely to observe them if you have reinforced instruction following in the past.

History of Reinforcement

The subjects' histories of reinforcement were undoubtedly major influences on their responses to the various experimental conditions.
Past histories may have strengthened, weakened, or brought under stimulus control the observing response, instruction repeating, and instruction following. Above I discussed the possible effects of reinforcement history on the strength of the observing response; I will now discuss the effects of reinforcement history on instruction repeating and instruction following.

The subjects in these experiments most probably acquired generalized rule following early in their lives, since our culture and the physical world provide contingencies for following rules under many different conditions. However, their different histories probably provided them with generalized rule following responses of varying strengths. Differences in reinforcement histories may have been a major determinant of the differences in subjects' responses to the instructions given in these experiments. For example, in Experiment I, the reinforcement history of Subject 2 for instruction following may have been more extensive than the histories of Subjects 1 and 3. In the staff management study, all of the subjects had undergone a fairly extensive recent history for instruction following, in the context of the specification-observation-consequence delivery format of a behavioral staff management system. Such a history may have been largely responsible for the initial effects seen in the detailed instructions condition with those subjects.

**Stimulus Control**

Varying response strengths of generalized rule following may well explain much of the variability seen in the effects of instructions.
However, instruction following was probably also under the stimulus control of certain aspects of the conditions under which instructions were given. Even if all the subjects' instruction following was at the same general response strength, they may have undergone histories of reinforcement which resulted in different response strengths under different stimulus conditions. Such a possibility has been demonstrated experimentally by Galizio (1979).

For example, in the staff training experiment, Subjects 1 and 3 may have been conditioned such that instruction following was at greater strength when the instructions were given by a KVMC teacher or course assistant (supervisors with legitimate authority) than when they were given by a graduate student doing research (one without supervisory authority). On the other hand, in the staff management study, in which instructions were more effective, the instructions were given by the same supervisor who provided consequences for instruction following in the past.

Indeed, this difference in instructions givers was emphasized by the contents of the consent forms used in the staff training experiment. This experiment was research and required informed consent. The consent forms that the subjects signed contained the following phrase:

I understand that no . . . (course grade) . . . contingencies will be applied . . . as a result of any observation and recording of my performance as a subject in this study.

On the other hand, there were no consent forms used in the study reported in Experiment II, since it was program evaluation of routine staff
management practices rather than experimental research. Thus, the consent form may have been partially responsible for the ineffectiveness of instructions in that situation.

Other elements of the stimulus situation may also exert stimulus control over instruction following. For example, the strength of instruction following may vary according to whether instructions are oral, written, or modeled. It may also vary according to the particular room or locality in which instructions are given.

The content of the instructions themselves may be a source of stimulus control. For example, in the staff training experiment, the situation of working directly with a child was significantly different from the subjects' previous academic work situations (i.e., reading, taking quizzes, etc.). On the other hand, in the staff management study, the subject matter to which the instructions applied (the operation of data systems used in the treatment setting) was somewhat constant before the study as well as during the study. This is conceptually similar to the findings of Horton (1975) who demonstrated that instruction following can come under the control of the subject matter to which the instructions apply.

The particular response component of instructions may also be a source of stimulus control. In the staff training experiment, the responses described in the instructions involved interacting with a child (e.g., giving child a reinforcer, presenting task command), while previous academic work involved instructions describing responses involving interaction with instructional materials (e.g., reading texts, taking tests, writing papers, etc.). On the other hand, in
the staff management study, the instructions described written responses, a stimulus condition similar to past (pre-experimental) situations in which the subjects received instructions which also described written responses.

Most of the time, the response strength is probably multiply controlled, with the stimulus generalization gradient lying along a dimension of the overall degree of similarity of conditions to the conditions under which instruction following was consequated in the past. Thus, when giving instructions, it is important to give consideration to a variety of aspects of the stimulus situation.

To deal with the problems presented in this discussion of stimulus control of instruction following, we may suggest the following rule:

When one or more elements of a stimulus condition change(s), generalized instruction following is more likely to persist if you reinforce the first several instances of instruction following under the new conditions.

Motivational Variables

Motivational variables must also be considered. In a discussion of motivational variables, we must remember that

As a discriminative stimulus, a rule is effective as part of a set of contingencies of reinforcement. A complete specification (of the contingencies) must include the reinforcement which has . . . brought (the response) under the control of the stimulus (the rule).

(Skinner, 1969, p. 148)

Strictly speaking, then, the effects of the consequence-specification components are stimulus control effects, just as the effects of the overall rule are. However, motivational, or establishing operation
(Michael, 1978) variables may interact with the consequence-specification component.

If the consequence described in the rule has not been established as an effective incentive (Malott, 1980) for the subject, it is less likely that the response will be emitted. For example, the less effective instructions in the staff training experiment specified consequences related mostly to changes in the clients' repertoires. Loeber and Weisman (1975) have suggested that improvement in clients' repertoires is not always a reinforcer for trainers. On the other hand, the more effective instructions in the staff management study specified or implied consequences related directly to the subjects, such as response effort reduction and performance evaluation.

Past establishing operations may interact with instruction-specified consequences in determining the current strength of the response. However, control of the response is not limited to establishing operations that occur prior to the transmission of the instructions. We may often expect that the primary consequence of the behavior described in the instructions will not act as adequate incentives for instruction following. In such cases, establishing operations may be made to precede or accompany instructions so that the consequences become a source of strength for the specified response. These establishing operations may often be incorporated into the consequence component of the instructions as supplements to and/or qualifications of the basic consequence.

Additional consequences which have proven to be adequate incentives for the subject may be described (and provided for). For example,
instructions might specify course grade or performance evaluation contingencies in addition to the "natural" consequences of the desired behavior.

One might also provide an establishing operation which increases the reinforcing property of the basic consequence. Such an establishing operation might describe how the basic consequence is directly related to other events which are reinforcing to the person receiving instructions. For example, the consequence specification might not only describe how a client's repertoire would change, but also how those changes would benefit the trainer.

Even if the event specified in a rule is an effective incentive as such, other aspects of the consequence description may determine the degree to which that component interacts with other variables in determining the probability of the response. Malott (1980) has introduced the concept of the "weak rule," defining it as one which specifies distant, improbable, and/or cumulative outcomes. He suggests that such outcomes are not likely to serve as adequate incentives to maintain rule following, and that additional consequences for rule following are necessary.

The less effective instructions in the staff training experiment specified as consequences client repertoire alterations which were delayed and cumulating, that is, could only be expected after repeated emissions of the specified response, (e.g., ". . . this is to increase the probability that the child will make the correct response in the future. . ."). Further, such consequences are not necessarily certain in all cases; a particular child may not respond to a particular
training procedure. Thus, the ineffectiveness of these instructions may have been due in part to the weakness of the specified outcomes as adequate incentives for instruction following.

Malott (1980) has suggested that when weak outcomes are specified in rules, additional consequences must be provided for rule following. Such consequences might include self given ones as well as ones provided by the external environment. However, Malott also suggested that the behaviors of self observation, self evaluation, and self consequation are not at adequate strength in the repertoires of most people. Therefore, a manager should arrange consequences for the following of weak rules, in the staff's external environment.

From this discussion of motivational variables' interaction with the consequence-description component of instructions, we may derive the following rules:

When giving instructions, they will be more effective if you specify, in the consequence description component of the instructions, events which are known to be strong incentives for the people receiving the instructions.

Sometimes you may have to give instructions in which you are not able to include a specification of consequences which are strong incentives for the people receiving the instructions. In such a case, the instructions will be more effective if you include a description of any relationships that may exist between the consequences and events which are known to be strong incentives for the people receiving the instructions.

When giving instructions which specify long term, improbable, or cumulating outcomes, the instructions will be more effective if you arrange consequences for instructions, in the external environment of those receiving the instructions.

The Occurrence or Presence of a Rule Statement

Even if an observing response is made, the rule is acquired, and
there is adequate motivation, the person must also emit the rule, or the rule must otherwise be present in the environment under the appropriate circumstances (e.g., during a client training session), in order for the rule to evoke the desired response topography described by the rule. Although it is reasonable to expect that the response would soon come under contingency control, at least the first several responses might need to be evoked by a rule present in the environment, transmitted by someone else, or by restatement of the rule by the person. Whether a person actually restates a response-evoking rule depends largely on the person's past history of reinforcement.

In the staff training experiment, in which instructions were less effective, the instructions were not available to the subjects during client training sessions, since the subjects were alone with their clients in closed training booths. On the other hand, in the staff management study, in which instructions were more effective, "criterion sheets" (part of the detailed instructions) were available, and the experimenter informally observed some subjects refer to them as they performed their data processing tasks.

Gilbert (1978) describes another example of this when he reports the case in which a furnace repair person was more cost effective in diagnosing furnace malfunctions than her fellow workers. Upon investigation, it was found that when working, she referred to a diagnostic procedures checklist in the appendices of her training manual, a practice her fellow workers did not follow. Subsequently, this checklist was permanently affixed to all the firm's furnaces, resulting in an increase in the cost effectiveness of the other workers.
From this discussion of the presence of a statement of the rule as a response evoking event, we may derive the following rule:

When instructions have been given, it is more likely that they will be present under conditions for performance and thus evoke the desired performance if you also make them a permanent part of the environment in which the performance is to take place.

It might not always be possible or desirable to follow the above rule. When this is the case, and when the performance has not yet come under contingency control, the person may have to state the rule in order to evoke the desired performance. Malott (1980) has suggested that whether a person does so depends on whether the rule is in the person's repertoire, and whether rule-statement behavior is under adequate stimulus control.

We saw earlier that an observing response on the part of the subject is necessary for rule acquisition. Other variables related to a person's behavioral history which may be determinants of rule acquisition include: the number of times the rule is presented (Michael, personal communication, 1979); whether active restatement of the rule was required; whether such statements were reinforced; whether rule statement was prompted periodically following training; and whether such prompted rule statements were reinforced. These variables should be addressed in the applied setting.

For example, requiring people receiving instructions to repeat them until correct, and reinforcing their correct rule repetition would require them to make the observing response, and strengthen rule-statement behavior.

The general ongoing provision of instructions to staff which
in most applied settings might provide a vehicle for the periodic re-
presentation of previously given instructions. For example, instruc-
tional memos describing additions or changes to procedures should be
cumulative in nature, providing at least a brief summary of any pre-
viously provided instructions which are related to the primary topic
of the memo. When a manager gives such instructions, he/she should
prompt staff to attend to such summaries.

Modeling the overt repetition of major rules could be used to
prompt rule repetition by the staff to enhance correct stimulus con-
trol. Such prompting should be done in the situations in which the
particular rule is relevent.

Malott (1980) has also suggested that a statement of the form
"What rule is most appropriate here?" could evoke previously acquired
rule-statement behavior. A manager might model this kind of state-
ment on a more general basis, across various situations.

Since rule-statement behavior facilitates rule following, it is
important to reinforce rule statements as well as rule following.
Managers should reinforce accurate re-statement of instructions dur-
ing training, as well as any "spontaneous" or prompted rule statements
which he/she observes subsequent to training.

From this discussion of the importance of rule statements, we
may derive the following rules:

When giving instructions, it is more likely that people
will acquire and repeat them and thus evoke the de-
sired behavior if you require the people receiving the
instructions to accurately repeat them, and reinforce
those repetitions.

When instructions have been given, it is more likely
that they will be repeated and thus evoke the specified behavior, if you re-present them periodically.

When instructions have been given, it is more likely that the people will repeat them, thus evoking the specified behavior, if they are prompted to repeat them and are reinforced for doing so.

**Competing Rules**

Another source of variables which may influence the effectiveness of instructions is that of competing rules. The content of these rules may range from suggestions that an alternate response form is acceptable if not more appropriate, to suggestions that the specified consequences are not highly probable and/or of value.

In the staff training experiment, some of the therapists may have derived their own rules regarding the necessity of getting the child's eye-contact attention prior to giving task commands, using descriptive praise, etc., perhaps from the surrounding classroom and school environment, in which therapists were able to observe apparently reinforced models of less precise therapy techniques in the performance of less thoroughly trained therapists. (Many observers of the KVMC site have commented upon the prevalence of the phrase "good job" used as a social reinforcer, rather than more descriptive praise.) Further, the experimenter informally observed such less thoroughly trained therapists state rules which described their less precise techniques. These competing rules, once acquired, or present in the therapy environment, could have an effect on the behavior prescribed by the "correct" rules, especially since the competing rules were stated on an intermittent but ongoing basis, while the correct rules were presented on
only one occasion, and also because the less precise techniques involved lower response effort than the correct techniques.

In the staff management study, any competing-rule effects were probably more related to the consequence description component of the rules. First, the responses related to client data processing were less public and thus, less available as a model to be imitated, or to serve as a basis for rule derivation. In addition, given the standardized data sheets, there was not a gray area in which the staff could have seen alternate response topographies to satisfy the contingencies.

On the other hand, some of the short term consequences described in the instructions (e.g., "you would be able to more quickly scan these reports . . ."; (it will) expedite my . . . review of these reports . . .") may have been vulnerable to competing rules. For example, a person might have personal rules about writing case notes which do not specify any review of data. In such a case, a rule specifying a consequence of data-review response-effort reduction would probably have little effect. Also, staff members may have personal rules which describe a low probability of a supervisor immediately reviewing the person's performance or conducting performance evaluations. For example, a person might say, "I don't need to do this task because the supervisor probably won't observe for my performance of it." Such personal rules might also describe the low incentive value of the described consequence, even if the consequence was considered to be probable and short term. For example, a person might say, "I shouldn't work for consequences which have no value for me; the consequences for doing this task have no value for me, so I shouldn't do the task."
Such competing rules are quite likely to occur in many work settings. Martin (1975) refers to the process by which such rules are acquired as "unplanned in-service training," in which "an institution . . . shapes the behavior of the staff member. . . ." Managers who wish their instructions to be maximally effective must deal with this problem. To do so they must accept the probability of the existence of such competing rules, ascertain what the major competing rules are, and provide instructions and consequences for instruction following, which decrease the effects of those competing rules.

First, it may well be that the competing rules are not inaccurate, particularly with respect to past practices in the setting. And even if the competing rules are now inaccurate, it does not necessarily follow that control will shift to the new rules and contingencies. Galizio (1979) found that when contingencies were changed from the previous condition, but the subjects did not come into contact with the new contingencies, the subjects remained under the control of the instructions describing the old contingencies. He also found that instructional control was eliminated after a contingency change in which the subjects came into contact with the discrepancy. This might well be particularly true with a rule related to an avoidance contingency in which the consequence is the non-occurrence of an event. In such a case, avoidance behavior might persist after the removal of the contingency, as long as the same aversive stimulus did not re-occur.

From this we can see that the manager must not only change the contingencies to support the behavior described in the new rules, but also to weaken the effects of old competing rules. It may not be enough
to arrange for the reinforcement of the desired behavior; if the behavior described in the old rule is still at strength, additional contingencies may have to be arranged to weaken the competing behavior. Unless these contingencies involve punishment, the subject must be made to come into contact with the discrepancies between the old rule and the new contingencies. It may often be possible to accomplish this by giving instructions which explicitly describe the discrepancies. However, such instructions themselves may be ineffective, for any of the reasons discussed in this paper. In such cases, it would be necessary to arrange for the person to come into direct contact with the contingencies themselves.

From this discussion of the effects of competing rules, we may derive the following rules:

When previously learned rules may generate behavior incompatible with the performance specified in the instructions, if you arrange contingencies to support the desired performance and arrange contingencies which will weaken the competing behavior, the instructions will be more effective.

When contingencies have been designed to weaken behavior competing with instructions, they will be more effective if you arrange for the person to come into contact with the discrepancy between the old and new contingencies, either by giving instructions explicitly describing the discrepancies and/or having the person come into direct contact with the new contingencies.

**Schedule/Contingency Effects**

The last source of control for instruction following to be discussed, and perhaps the most significant one, is that of schedule/contingency effects. Concurrent schedules of reinforcement for other behavior may decrease the strength of the instructions-specified
response. Lack of immediate contact with the consequences specified in the instructions may weaken the effects of the instructions. Encountering consequences not specified in the instructions might also weaken the effects of instructions. Finally, a person's behavior may remain under the control of previously stated rules if they do not encounter discrepancies between the consequences described in the old rules and those currently prevailing.

In the staff training experiment, there may have been a conflict between the contingencies described in the instructions and a concurrently available schedule of reinforcement. There was an informal contingency in effect regarding the number of training trials presented to the clients. The KVMC supervisors encouraged trainers to "get in as many trials as possible." Since the instructions-specified task-command sequence and descriptive-praise sequence took longer to perform than the less complete forms of these responses, the number of trials possible in the training session would be decreased if the correct sequences were always performed. Thus, the schedule in which reinforcement was based on the rate of trial presentation might compete with the schedule in which reinforcement was based on the topography of the response.

In the staff management study, the subjects could perform their data-processing tasks at any time that therapy or similar tasks were not scheduled, unlike the situation in the staff training experiment in which the opportunity to respond was limited to the client training session. Thus, in the staff management study, it is more likely that generally available reinforcement schedules involving drinking coffee,
talking to other staff members, doing other paperwork, etc., would be the concurrent schedules to affect staff performance.

The degree to which rules or instructions accurately describe the contingencies actually in effect, and the extent to which the person comes into contact with those contingencies, are sometimes important determinants of instruction following. Lack of contact with any consequences may lead to extinction. Such a lack of contact may result from inaccurate rules or incomplete rules, or it may result from the delay in the occurrence of long term consequences. Also, even a reasonably accurate rule will never predict all possible consequences, and certain anomalous events may indicate that the rule is generally inaccurate.

In the staff management study, Subjects 1 and 2 showed downward trends after initial increases immediately following the onset of the detailed instructions condition. These findings are similar to Galizio's (1979), in which instructional control persisted in only one of two subjects after the removal of instructions, and the changing of the contingencies. They are also similar to those of Pommer and Streedback (1974) and Shook, et. al., (1978) in which the effects of instructions were found to be temporary. Since the experimenters provided no explicitly delivered consequences for instruction following in these conditions, the consequences described in the instructions were the only consequences which were available for instruction following. Thus, a lack of contact with such rule-specified consequences may have been related to the decrease in the strength of rule following.

Galizio's (1979) research on instructional control suggests two
additional interpretations of these downward trends. He found that when contingencies were changed from those of the previous condition, but the subjects did not come into contact with the differences between the contingencies, the subjects remained under the control of the instructions describing the old contingencies. On the other hand, he also found that instructional control was eliminated after a contingency change in which the subjects did come into contact with the discrepancy. Finally, he found that when the old contingency was re-instated, the subjects did not come back under the control of the (now correct) instructions, but continued to respond according to the schedule which had led to the discrepancies. Galizio concluded that:

Contact with schedule-instruction discrepancies is necessary for the elimination of instruction following, not simply the existence of such a discrepancy . . . subject reactions to the instructions were irreversibly altered after exposure to the contact condition. Subjects now "disbelieve" the instructions. . . . (p. 62)

Thus, contact with events not specified in the instructions, or failure of the specified events to occur, may have been related to the weakening of instructional control seen in these downward trends.

There is another possibility related to Galizio's findings regarding the effects of contact with rule-contingency discrepancies. If a person comes into contact with an event other than the consequence described by instructions, after performing the behavior described by the instructions, they may be less likely to follow those instructions in the future. This could occur even if the rules were generally accurate. As galizio said in the quote above, subjects may come to "disbelieve" the instructions.
From this discussion of schedule and contingency effects, we may derive the following rules:

When certain reinforcement schedules might weaken the performances specified in instructions, the instructions will be more effective if you arrange the environment such that those schedules are not available under the conditions specified in the instructions.

When it is possible that the consequences described in instructions may not regularly follow instruction-following, the instructions will be more effective if you provide additional consequences for instruction following.

When it is possible that instructions-specified performance will occasionally be followed by events not specified by the instructions, the instructions will be more effective if your instructions explicitly describe this possibility in general and any typical examples in particular.

Summary

Instructions often have variable effects on performance. Managers are interested in procedures to facilitate performance, and frequently use instructions for such a purpose. Therefore, managers might find useful any rules which describe the conditions under which instructions are more effective. Such rules can be derived from analysis of situations in which instructions have been effective, and situations in which they have not been effective. In the preceding discussion, I have presented such analyses of the results of Experiments I and II, and of the other research as well. From these analyses, I derived rules which were presented throughout the previous discussion.

These rules are listed below according to the behavioral processes to which they are related. They are in abbreviated form; the antecedent and consequence components are provided only when they are other than
the typical ones of "when giving instructions" (antecedant) and "they
will be more effective" (consequences).

1. Completeness of Rules
   A. Give instructions in the form of complete rules (i.e.,
      include description of antecedant, behavior, and conse-
      quence).
   B. Use examples and non-examples when possible.
   C. When giving instructions in the form of incomplete rules,
      make certain that the missing components are strongly
      implicit in the conditions under which you give the
      instructions.

2. The Observing Response
   Require people receiving instructions to actively and accu-
   rately verbalize the instructions.

3. History of Reinforcement
   Provide for the reinforcement of generalized instruction
   following.

4. Stimulus Control
   When one or more elements of a stimulus condition change(s),
   reinforce the first several instances of instruction follow-
   ing under the new conditions.

5. Motivational Variables
   A. In the consequence description component, specify events
      which are known to be incentives for the people receiving
      the instructions.
   B. When this (A above) is not possible, include a descrip-
      tion of any relationships that exist between the conse-
      quences and events known to be incentives for those
      receiving the instructions.
   C. When giving instructions which involve long term,
      improbable, or cumulating outcomes, arrange for extrinsic
      reinforcement for following the instructions.

6. Rule Statement
   A. When possible, make instructions a permanent part of the
      environment in which the instructions are to be followed.
   B. Require people receiving instructions to actively and
      accurately verbalize them, and reinforce such verbalizations.
   C. Re-present instructions periodically.
   D. Prompt people to repeat rules, and reinforce such repetit-
      ions.

7. Competing Rules
   A. Arrange contingencies which support instruction following,
      and contingencies which weaken competing behavior con-
      trolled by previously learned rules.
   B. Arrange for people to come into contact with discrepant-
      cies between old contingencies, and new instructions and
      contingencies.

8. Schedule/Contingency Effects
   A. Arrange the environment so that competing schedules are
not available under the conditions specified in your instructions.

B. When it is possible that instructions-specified performance will occasionally be followed by events not specified by instructions, explicitly describe this possibility in general and any typical examples in particular.

To the extent that the rules derived in these areas are only derived from empirical data by inference, they should be considered only "working rules" which should be submitted to experimental validation. As such, they may be seen not only as heuristic guides to the manager, but also a basis for the generation of research questions for further investigation. Indeed, no rule ever completely and/or accurately describes the contingencies which it is said to describe, from which it is derived (Skinner, 1969).
APPENDIX A: EXPERIMENT I - STAFF TRAINING

As the application of behavior analysis has been proven to be effective in teaching and in behavior management with "normal," "retarded," and "mentally ill" children and adults, the demand for behavior change agents, trained in these techniques, has increased. In order to meet this demand, behavior analysts have trained a variety of non-professionals to use the techniques of behavior analysis.

Several studies have investigated means by which non-professional behavior change agents can be effectively taught to use those techniques. In an early study (Hawkins, Peterson, Schweid, and Bijou, 1966), the experimenters taught parents to modify the problem behaviors of their children through the use of social praise contingent on appropriate behavior. With the training of parents begun, some behavior analysts began to train teachers in the use of the techniques of behavior analysis (Hall, Lund, and Jackson, 1968).

Now that they were training parents and teachers, behavior analysts began to train teachers' aides (Saudargas, 1974; Rule, 1974), ward attendants (Panyon and Patterson, 1974), undergraduates (Clark, 1975), houseparents in homes for "pre-delinquent" children (Kirigin, Ayala, Braukmann, Brown, Minkin, Phillips, and Wolf, 1974), and high school students (Gladstone and Sherman, 1974). Even children (Surratt, Ulrich, and Hawkins, 1970) have been trained to use behavior modification techniques. Recently, behavior analysts have trained non-professionals to train other non-professionals to train other non-
professionals (Matthews and Fawcett, 1974), and teachers to train other teachers (Jones, Fremouw, and Carples, 1977). Once trained, behavior change agents have delivered services to "normal" children (Jones and Eimers, 1975), children from low income families (Saudargas, 1974; Rule, 1974), "pre-delinquent" children (Kirigin, et. al., 1974), "hyperactive" children (Miller and Sloan, 1976), and even other non-professional behavior change agents (Matthews and Fawcett, 1974).

The specific techniques which non-professionals have learned include: the presentation of S^D's (Cossairt, Hall, and Hopkins, 1973); the use of prompts (Miller and Sloan, 1976); the delivery of contingent attention as a reinforcer (Hall, et. al., 1968); the delivery of specific praise as a reinforcer, the use of punishment procedures (Clark, et. al., 1975), and the use of extinction procedures (Rule, 1974).

In most of these studies, the non-professionals were taught only one or two specific techniques. Recently, however, behavior analysts have sought to teach multiple skills to non-professionals (Clark, et. al., 1975; Gladstone and Sherman, 1975; Jones and Eimers, 1975; Jones, et. al., 1977; Willner, Braukmann, Kirigin, Fixsen, Phillips, and Wolf, 1977; Koegel and Rincover, 1977). Finally, some behavior analysts have considered social skills to be an important element of the repertoires of behavior change agents (Willner, et. al., 1977).

Behavior analysts have used a variety of methods to train non-professionals. While Hall, et. al., (1968) found pre-session instructions to be effective, others (Panyan and Patterson, 1974; Clark, et. al., 1975) have found that instructions alone do not always generate desirable levels of performance. Some have found live modeling of the
use of a technique to be effective (Gladstone and Spencer, 1977) while others have not (Ringer, 1973; Clark, et. al., 1974); Panyon and Patterson (1974) found video taped models to be effective.

Experimenters have found that cues given to subjects while they conduct training sessions are effective. Stimuli which have been used as cues for the use of a specific technique include lights (Winkel, Peterson, and Morrison, 1965; Ward and Baker, 1968), gestures (Hawkins, et. al., 1966), and audio signals (Van Houten and Sullivan, 1975). A procedure which might be considered to provide $S^D$'s for the use of specific techniques is the self-recording of the delivery of reinforcement, which was done by subjects being trained by Herbert and Baer (1972).

Experimenters have also arranged consequences for trainees' behavior, to be delivered as the trainees conduct training sessions with clients. Consequences which have been found to be effective include: the use of lights to signal correct responses (Wahler, et. al., 1965); self recording (Herbert and Baer, 1972); and written notes passed to the trainee during ongoing sessions at fixed intervals (Parsonson, Baer, and Baer, 1974). A more complex procedure was used by Rule (1974) to improve the performance of teachers' aids. This procedure included: the experimenter observing the subject for five minute periods, and evaluating the performance within each period; telling the subject whether they had met a specified performance criterion; allowing the subject to continue the session (if the subject met the criterion), and require the subject to observe the experimenter conduct the session for the next five minutes (if they had not met criterion).

Experimenters have also delivered feedback for in-session
performance after the end of the session. Several studies have shown that the viewing of video tapes of a session is effective in improving performance (Bernal, Duryee, Pruett, and Burns, 1965; Saudargas, 1974; Rule, 1974; Horton, 1975). Shook (1974) found a graphic feedback to be an effective form of post-session feedback. Many studies also indicate that post-session feedback delivered orally in person by an experimenter is also effective (Clark, et. al., 1975; Cossairt, et. al., 1973; Kirigin, et. al., 1975). Major consequences, such as contingent course grades (Clark, et. al., 1975) and contingent pay bonuses (Clark and Macrae, 1976), have been found to be very effective.

One or more of the antecedants of consequences listed above are often combined into a training package. These packages are usually used for the purpose of achieving a large effect in trainee behavior. Such changes in performance have been considered as independent variables with respect to client performance (Jones and Eimers, 1975; Jones, et. al., 1977). Experimenters have also assessed the effectiveness of such packages in terms of the generalization of improvements of performance which are achieved by the use of the package, across situations (Gladstone and Sherman, 1975; Horton, 1976; Miller and Sloan, 1976).

Although much research has been done in this general area of training behavior change agents, limitations have been observed. First, the number of behavior modification skills taught to non-professionals has usually been limited to one to three skills. Independent variables, then, have usually been assessed in terms of their effects upon just a few behaviors. Second, observation and recording
systems, when reported in a technologically replicable fashion, have naturally been limited to dealing with the specific dependent variables under study. Third, the elements of feedback packages and instructional packages have been described in limited detail, making follow-up component analysis experiments difficult if not impossible. Fourth, the effects of changes in the repertoire of behavior change agents upon the performance of their clients have not been well assessed. Although some (Hall, et. al., 1968) have done so, the assessment has usually been done in terms of the effect of the change in the behavior of the teacher.

The experimenter attempted to address some of these issues in the present experiment. He studied two dependent variables: presentation of $S^D$'s, and delivery of reinforcement. He measured these dependent variables through the use of a comprehensive recording system which was used to concurrently measure five other basic behavioral teaching skills. This study then provided information (in the form of reliability data) about the use of a comprehensive measurement system, in addition to the formal assessment of the effects of the dependent variables upon the dependent variables. Finally, the experimenter made an attempt in this study to define the feedback package in as technologically replicable a manner as possible, using flow charting to describe the behavior of the experimenter giving feedback to the subjects.
Method

Subjects. Four undergraduate students enrolled in Psychology 351 at Western Michigan University served as primary subjects. Psychology 351 is a 5-hour course in applied behavior analysis which includes a reading-lecture-testing section and a lab section in which each student carries out behavioral training with a retarded child for one hour, five days a week. The subjects worked with retarded children in a previous course. However, that course provided no in-depth teaching in the implementation of behavioral training methods; its primary purpose was to acquaint the students with mentally retarded children.

Setting. The subjects worked with three multiply handicapped children in attendance at the Kalamazoo Valley Multihandicap Center in Kalamazoo, Michigan. The children were all mentally retarded; in addition, each child had at least one other handicap, including post-natal brain damage, cereberal-palsy, and hyperactivity. The children's ages ranged from 10 to 15 years.

Training Room. The student therapists carried out training sessions in closed teaching booths of approximately 6' x 6'. The therapist and child sat on chairs at opposite sides of a small desk.

Training Tasks. The student therapists carried out pre-academic training with the children. One therapist used the DISTAR arithmetic program (Englemann and Carnine, 1970) with his child; the other therapist taught attending skills and picture identification using similar procedures.
Dependent Variables

Definition of Dependent Variables. Trained observers observed and recorded the occurrences of eight separate behaviors. These behaviors were:

1. Presentation of attending $S^D$
2. Presentation of task $S^D$
3. Presentation and fading of prompts
4. Reinforcement delivery
5. Use of appropriate correction routine
6. Ignoring of (puts on extinction) inappropriate child behavior
7. Use of prescribed punishment procedure
8. Differential reinforcement of "good conduct" behavior.

Baseline measures indicated that for many of these behaviors, there were few occasions upon which they should appropriately have been emitted. Further, the research design, below, limited the number of behaviors which could be dealt with within a single experiment. Therefore, the experimenter chose only two behaviors as dependent variables.

The experimenter combined the behaviors of presentation of the attending $S^D$ and of the presentation of the task $S^D$ into one category designated as presentation of trial $S^D$. He defined a correct presentation of the trial $S^D$ in terms of the following responses and relationships:

1. The attending $S^D$ consists of the therapist saying "(Subject's name), Look!", and pointing to the educational materials or therapist's eyes (as appropriate for the specific child's training procedure).
2. The task $S^D$ consists of the therapist presenting the question, command, signal, etc., prescribed in the child's training procedure.

3. The therapist presents the attending $S^D$ only after the subject has not been attending for 10 seconds, and only if the child is not engaging in disruptive behavior.

4. The therapist presents the task $S^D$ only when the child is attending and not engaged in disruptive behavior.

The experimenter considered any deviation from these responses and relationships to be an incorrect presentation of the trial $S^D$.

The experimenter defined a correct occurrence of reinforcement delivery in terms of the following responses and relationships:

1. Therapist delivers the reinforcement contingent only on a correct response by the child.

2. Therapist delivers the reinforcement immediately (within 1 second) after the correct response.

3. Therapist describes to the child the response being reinforced.

4. Therapist praises the child for making the correct response.

5. Therapist makes physical contact with the child.

6. Therapist delivers the reinforcer prescribed in the child's procedure description.

7. Therapist makes these responses only in the order described above.

The experimenter considered any deviation from these responses and relationships to be an incorrect delivery of reinforcement.
Since the responses to be made by the therapists were related to those made by the children, categories of child responses had to be defined and recorded. Each child's procedure description defined the correct response which was to be made to the trial $S^D$. The experimenter divided the responses to children could potentially make to the trial $S^D$ into four categories:

1. Correct response (as defined by the procedure description)
2. Incorrect response (other than defined by the procedure description)
3. Inappropriate behavior (off task or disruptive behavior)
4. No response (no response within 10 seconds of trial $S^D$).

**Measurement of Dependent Variables.** As mentioned previously, trained observers recorded several behaviors comprising a minimum repertoire for behavioral teaching; among these were the dependent variables. The flow chart in Figure 6 depicts the relationships among these responses in terms of their prescribed occurrence within a given training trial. This flow chart depicts the dependent variables, trial $S^D$ and correct reinforcement delivery, in greater detail; these responses are identified by enclosure in dotted-line boxes.
Figure 6

A Flowchart depicting the components and sequences of components of a minimal repertoire for behavioral teaching and behavior management. The dotted-line boxes enclose the components comprising the dependent variables of Experiment I, trial S^D presentation, and reinforcement delivery.
Figure 6

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Using a data sheet based on this flow chart (see Figure 7 for a sample of this data sheet), the observers carried out trial-by-trial recording during experimental conditions. The experimenter measured the relative frequencies of occurrence of the dependent variables in terms of their occurrence per opportunity. For a trial $S^D$, a defined opportunity was the occurrence of a trial. For reinforcement delivery, an opportunity was the occurrence of a correct response to a trial $S^D$ by the child.
A data sheet for recording teacher/trainer behavior, based on the flowchart in Figure 6. The following codes are used:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait</td>
<td>Therapist gives child a 10&quot; to attend on own</td>
</tr>
<tr>
<td>Att</td>
<td>Therapist gives attending SD</td>
</tr>
<tr>
<td>SR+</td>
<td>Therapist reinforces attending</td>
</tr>
<tr>
<td>Comm</td>
<td>Therapist gives task command</td>
</tr>
<tr>
<td>Wait</td>
<td>Therapist gives child 10&quot; to respond</td>
</tr>
<tr>
<td>NR</td>
<td>No response by child within 10&quot;</td>
</tr>
<tr>
<td>Prompt</td>
<td>Therapist gives child a verbal prompt</td>
</tr>
<tr>
<td>Verbal</td>
<td>Therapist gives child a model</td>
</tr>
<tr>
<td>Physical</td>
<td>Therapist gives child a physical prompt</td>
</tr>
<tr>
<td>CR</td>
<td>Correct response by child within 10&quot;</td>
</tr>
<tr>
<td>IR</td>
<td>Incorrect response by child</td>
</tr>
<tr>
<td>DESC</td>
<td>Therapist describes child's correct response</td>
</tr>
<tr>
<td>Praise</td>
<td>Therapist praises child's performance</td>
</tr>
<tr>
<td>Phys</td>
<td>Therapist makes physical contact with child</td>
</tr>
<tr>
<td>SR+</td>
<td>Therapist delivers tangible reinforcer</td>
</tr>
<tr>
<td>MTC</td>
<td>Therapist conducts DISTAR correction - model task components</td>
</tr>
<tr>
<td>GA</td>
<td>Therapist conducts DISTAR correction - give answer</td>
</tr>
<tr>
<td>Prompt</td>
<td>Therapist conducts DISTAR correction - leading</td>
</tr>
<tr>
<td>S</td>
<td>Therapist reinforces correct response on correction trial</td>
</tr>
<tr>
<td>EXT</td>
<td>Therapist ignores inappropriate behavior</td>
</tr>
<tr>
<td>No</td>
<td>Therapist says &quot;no&quot; following inappropriate behavior</td>
</tr>
<tr>
<td>DESC</td>
<td>Therapist describes inappropriate behavior</td>
</tr>
<tr>
<td>S</td>
<td>Therapist delivers prescribed aversive stimulus</td>
</tr>
<tr>
<td>Client</td>
<td>Date</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>Therapist</td>
<td>Task</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wait Att Sr+ Comm</th>
<th>Wait NR</th>
<th>Prompt:</th>
<th>CR DESC Praise Phys. Sr+</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbal model physical</td>
<td>IR Ext</td>
<td>MTC GA Prompt Sr+ No DESC Sr-</td>
<td></td>
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</tbody>
</table>

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<tr>
<th>AB DRO: DESC Praise Phys. Sr+</th>
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<tbody>
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<tbody>
<tr>
<td>verbal model physical</td>
<td>IR Ext</td>
<td>MTC GA Prompt Sr+ No DESC Sr-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AB DRO: DESC Praise Phys. Sr+</th>
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<tbody>
<tr>
<td>IB TO</td>
</tr>
</tbody>
</table>

Figure 7

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Reliability Measures. The observers made their observations via a closed circuit television system comprised of a camera and microphone in the therapy booth and a remote monitor in another room. The primary observers viewed live sessions on the monitors; in addition, the experimenter made video tape records of the sessions for reliability assessment. To assess the reliability of the primary observations, trained observers viewed and rated randomly selected video-tape records. The observers had no indication of either the calendar date on which the records were made, or of the experimental conditions in effect when the records were made. The reliability observers assessed at least one video tape record from each experimental condition for each subject. The experimenter computed the levels of agreement between primary and reliability observers using the Type II reliability computational method: % agreement = agreements / (agreements + disagreements) x 100.

Independent Variables. This study compared the relative effects of three independent variables: general instructions (delivered by the staff of KVMC), specific instructions (with testing to mastery of the instructional material), and feedback package (administered by the experimenter).

General Instructions. The student therapists worked with children who were clients of KVMC. A specified KVMC staff member monitored each child's individual treatment program and was responsible for the delivery of services to the child; in this capacity, they were responsible for training therapists in the use of specific training procedures, and for the monitoring and maintenance of the therapists'
ongoing implementation of these training procedures. To instruct the student therapist in the use of training procedures, the KVMC staff members gave them written instructions which described the specific training procedure and additional oral explanations. In order to monitor the therapist's performance and to guide the delivery of feedback, the KVMC staff members used a skill checklist which provided 5-point rating scales of the therapists' use of several behavioral teaching skills. After observing a therapist's session and rating the observed performance, the KVMC staff members gave the therapist the performance ratings as feedback for the various teaching skills. The vertical bars on the timeline in Figure 8 in the general instructions condition indicate the occasions on which this feedback was given. The KVMC staff discontinued these informal instructions and feedback upon the implementation of the specific instructions condition.
Figure 8

A flowchart depicting the components and sequences of the Feedback Package serving as an independent variable in Experiment I.

Note: The dotted-line box labeled "Question-Answer Routine" encloses the components which are involved in the routines represented in the solid-line boxes also labeled "Question-Answer Routine."
Specific Instructions. When a subject's performance of the dependent variables seemed stable in the general instructions condition, the experimenter implemented the specific instructions condition. First, he gave the subject written instructions with an accompanying flow chart, which described specifically the correct form of the dependent variable being intervened upon. This instructional material included: 1) the technical term associated with the response (e.g., attending $S^D$, task $S^D$, reinforcement, etc.); 2) a description of the correct form of the response (i.e., the definition); 3) a behavior analytic rationale for the particular response form; and 4) examples of the correct response form. The experimenter then tested the subject over the material presented in the instructional material. He gave tests, and retests when necessary, until the subject passed a test at 100% mastery. The experimenter considered the day upon which a subject passed a test at 100% mastery to be the day upon which the specific instructions condition for that dependent variable was implemented. Subject 1 required three attempts to pass the mastery test over $S^D$ presentation; the other subjects required only one test for each set of instructions.

Feedback Package. When a subject's performance of a target response appeared stable after the implementation of the specific instructions condition, the experimenter implemented the feedback package condition, following the experimental design described in Figure 8. This feedback package included several components which were adopted from the achievement place model for teaching-parent interactions (Kirigin, et. al., 1975). These components are described in the flow
chart in Figure 9, and in the following narrative:

1. Evaluation
   
a. Observation, Recording, and Summary - While the subject carried out a training session with his/her client, the experimenter observed and recorded the occurrences of the target response for which feedback was to be given. The experimenter conducted this observation session for 50 trials or 15 minutes. During the time remaining until the end of the session, he summarized and graphed the subjects' performance of the target response. In addition, the experimenter identified at least one appropriate behavior which was not a target response, in order to have a behavior to give initial praise for (see "Initial Praise," l.b. below).

b. Initial Praise - After the subject ended the training session, the experimenter began the feedback by descriptively praising the subject for the previously identified appropriate, non-target behavior.

c. Test - If the subject's performance of the target response had improved since the last session, the experimenter gave the subject descriptive praise for this improvement (see "Descriptive Praise," l.d., below); if it had not improved, he presented the instructions component of the feedback package (see "Instructions," 2., below).

d. Descriptive Praise - The experimenter described the correct form of the target response, indicated that the subject was improving, showed the subject the upward movement on the performance graph and praised the improvement.

e. Question-Answer Routine - After the delivery of descriptive praise, the experimenter asked the subject if she had any questions regarding the target response. The experimenter answered any questions the subject had regarding the target response, but politely refused to answer questions about other issues (e.g., "I'm sorry, we can't talk about that not, but we will be able to talk about it soon."). He repeated this routine until the subject had no further questions.

f. Final Praise - After the completion of the question-answer routine, the experimenter presented the final praise component of the feedback package (see "Final Praise," 4., below).
2. Instructions

a. Teach - The experimenter described the correct response form; gave a rationale for the response form; described the incorrect characteristics of the subject's response form; gave rationale for why it was incorrect; and asked the subject to explain the descriptions and rationale to me.

b. Test - If the subject's explanation was correct, the experimenter gave descriptive praise (see "Descriptive Praise," 2.c. below); if the explanation was not correct, he re-presented the descriptions and rationales described above (see "Teach," 2.a., above).

c. Descriptive Praise - The experimenter indicated to the subject that the explanation was correct, and praised him for it.

d. Question-Answer Routine - After presenting descriptive praise, the experimenter presented the question-answer routine described above in 1.e.

e. Model - After the completion of the question-answer routine, the experimenter presented the model component of the feedback package (see "Model," 3., below).

3. Model

a. Teach - The experimenter modeled an instance of the correct response form and asked the subject to imitate or role play, the model he had presented.

b. Test - If the subject's role play was correct, the experimenter gave descriptive praise (see "Descriptive Praise," 2.c., below); if the role play was not correct, he re-presented the model (see "Teach," 3.a., above).

c. Descriptive Praise - The experimenter indicated to the subject that the role play was correct and praised him for it.

d. Question-Answer Routine - After presenting descriptive praise, the experimenter presented the question-answer routine described above in 1.e.

e. Final Praise - After the completion of the question-answer routine, the experimenter presented the final praise component of the feedback package (see "Final Praise," 4., below).
4. Final Praise - After all the required sequences of routines had been carried out, the experimenter ended the session by again praising the subject for improved performance of the target response and/or the appropriate non-target response. In addition, he thanked the subject for his/her time, cooperation, participation, etc.
Figure 9

A timeline depicting the experimental manipulations in Experiment I: across the responses of $S^D$ presentation ($S^D$) and reinforcement delivery ($S^{RF}$); for Subjects 1 (S1), 2 (S2), and 3 (S3); and across the conditions of General Instructions (horizontal cross hatching), Detailed Instructions (vertical cross hatching), Feedback Package (diagonal cross hatching), Child Absent - no session (no cross hatching), and KVMC monitoring sessions (vertical bars).
**Experimental Design:** In order to assess the effects of the independent variables, the experimenter used a multiple baseline-across responses design nested within a multiple baseline-across subjects design. He introduced the independent variables at different times for different dependent variables within subjects, and at different times for each subject, across subjects. Figure 8 depicts the order in which he introduced the various conditions.

**Interobserver Agreement.** The experimenter calculated the interobserver agreement using the Type II occurrence computational method, after obtaining the data as described above. Table 1 shows the results of these computations.
Table 1

A table depicting the ranges and arithmetic means of the percentages of agreement obtained in reliability checks in Experiment I, using the formula: 

\[ \% \text{ agreement} = \frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100. \]
<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Dependent Variable</th>
<th>% agreement = ( \frac{A}{A + D} \times 100 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>( \bar{x} )</td>
</tr>
<tr>
<td>S1</td>
<td>( S^D ) Presentation</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>( S^{R+} ) Delivery</td>
<td>97%</td>
</tr>
<tr>
<td></td>
<td>( \bar{x} ) across Dep. Var.</td>
<td>96%</td>
</tr>
<tr>
<td>S2</td>
<td>( S^D ) Presentation</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>( S^{R+} ) Delivery</td>
<td>96%</td>
</tr>
<tr>
<td></td>
<td>( \bar{x} ) across Dep. Var.</td>
<td>94%</td>
</tr>
<tr>
<td>S3</td>
<td>( S^D ) Presentation</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td>( S^{R+} ) Delivery</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>( \bar{x} ) across Dep. Var.</td>
<td>94%</td>
</tr>
<tr>
<td>( \bar{x} ) for ( S^D ) Presentations</td>
<td></td>
<td>92%</td>
</tr>
<tr>
<td>( \bar{x} ) for ( S^{R+} ) Delivery</td>
<td></td>
<td>97%</td>
</tr>
<tr>
<td>( \bar{x} ) for all Dep. Var. for all subjects</td>
<td></td>
<td>94%</td>
</tr>
</tbody>
</table>

Table 1

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Results

There were mixed effects in the specific instructions condition and consistent effects in the feedback package condition. Only one subject (S2) improved his performance in the specific instructions condition. In the feedback package condition, all of the subjects improved their performance on the dependent variable of trial s<sup>D</sup> presentation; the feedback package condition was not implemented for the dependent variable of reinforcement delivery due to the ending of the subjects' academic year.

General Instructions.

Due to variability during the general instructions baseline condition, this condition continued for 25 sessions before implementation of the next condition on Subject 1, in an attempt to make that implementation on a fairly stable behavioral baseline.

Figures 10 and 11 show the conditional probability of correct responses per opportunity for the behaviors of trial s<sup>D</sup> delivery and reinforcement delivery. There were no readily apparent systematic relationships between the occurrences of the conferences and changes in the performance of the subjects. The means of the subjects' performance levels of the dependent variables during this general instructions condition are listed in the general instructions column of Table 2, in terms of the conditional probabilities of correct responses. These performance levels were low with the exception of reinforcement delivery for Subject 3, which averaged a moderate level of .54 for the condition.
Figure 10

Graphs of the conditional probability (cp.) of correct $S_D$ presentation, for Subject 1 (S1), Subject 2 (S2), and Subject 3 (S3), across the experimental conditions of General Instructions; Detailed Instructions (Detailed Inst.), and Feedback Package (Feedback).

Note: The arrows above the plots in the General Instructions conditions indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
Figure 10.

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Figure 11

Graph depicting the conditional probabilities (cp.) of correct $S^D$ presentation and correct reinforcement ($S^R+$) delivery, for Subject 1, across the experimental conditions of General Instructions, Detailed Instructions (Detailed Inst.), and Feedback Package (Feedback).

Note: The arrows in the General Instructions condition indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
GENERAL INSTRUCTIONS  
DETAILED INST.  
FEEDBACK

SESSIONS
Figure 11
Figure 12

Graphs depicting the conditional probabilities (cp.) of correct $S^D$ presentation and correct reinforcement ($S^{R+}$) delivery, for Subject 2, across the experimental conditions of General Instructions. Detailed Instructions (DET. INST.) and Feedback Package (FEEDBACK).

Note: The arrows in the General Instructions conditions indicate occurrences of monitoring and feedback sessions conducted by KVMC staff.
Figure 12

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Table 2

A table of the: a) average conditional probabilities and b) changes in the average conditional probabilities, of: a) correct $S_D$ presentations and b) correct $S_{R+}$ deliveries, across the experimental conditions of a) General Instructions, b) Detailed Instructions, and c) Feedback Package.
<table>
<thead>
<tr>
<th>SUBJECT 1</th>
<th>Correct ( S^D ) Presentations</th>
<th>( \bar{X} )</th>
<th>.20</th>
<th>.06</th>
<th>.99</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIALS</td>
<td>Change</td>
<td>--</td>
<td>--</td>
<td>-.14</td>
<td>+.93</td>
</tr>
<tr>
<td>Correct ( S^{R+} ) Deliveries</td>
<td>( \bar{X} )</td>
<td>.05</td>
<td>.15</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Correct Responses by Child</td>
<td>Change</td>
<td>--</td>
<td>+.10</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>SUBJECT 2</td>
<td>Correct ( S^D ) Presentations</td>
<td>( \bar{X} )</td>
<td>.37</td>
<td>.90</td>
<td>.98</td>
</tr>
<tr>
<td>TRIALS</td>
<td>Change</td>
<td>--</td>
<td>--</td>
<td>+.53</td>
<td>+.08</td>
</tr>
<tr>
<td>Correct ( S^{R+} ) Deliveries</td>
<td>( \bar{X} )</td>
<td>.12</td>
<td>1.00</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Correct Responses by Child</td>
<td>Change</td>
<td>--</td>
<td>+.88</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>SUBJECT 3</td>
<td>Correct ( S^D ) Presentations</td>
<td>( \bar{X} )</td>
<td>.08</td>
<td>.07</td>
<td>1.00</td>
</tr>
<tr>
<td>TRIALS</td>
<td>Change</td>
<td>--</td>
<td>--</td>
<td>-.01</td>
<td>+.93</td>
</tr>
<tr>
<td>Correct ( S^{R+} ) Deliveries</td>
<td>( \bar{X} )</td>
<td>.54</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Correct Responses by Child</td>
<td>Change</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

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Specific Instructions.

The subjects' average performance levels for the specific instructions condition, and also the change in average performance from the general instructions condition, are listed in the specific instructions column of Table 2. Subject 2's performance improved in the specific instructions conditions, for both dependent variables, while the performance levels of Subjects 1 and 2 did not change significantly in the specific instructions condition. The multiple baseline across responses treatment of the data in Figures 11 and 12 show the replication of the effects of the specific instructions for Subject 2, and the "non-effects" of that condition for Subject 1.

Feedback Package.

The subjects' average performance levels in the feedback package condition and also the change in average performance from the specific instructions condition are listed in the feedback package column of Table 2. The performance levels for Subjects 1 and 3 improved greatly with the onset of the feedback package, for the dependent variable of trial $S^D$ presentation (the feedback package was not implemented for the dependent variable of reinforcement delivery). The performance level of trial $S^D$ presentation for Subject 2 increased slightly from the already high performance level achieved in the preceding specific instructions condition.
Discussion

General instructions had inadequate effect on the subjects performance which did not reach high levels. Detailed instructions had mixed effects, with performance improvement for only one of three subjects. These results may be attributed to several sources of control:

1. The completeness and specificity of the instructions
2. Whether subjects attended to the instructions
3. Whether subjects acquired the content of the instructions
4. Reinforcement history
5. Whether instruction following was under stimulus control
6. Motivational variables
7. Whether subjects self-stated instructions prior to performance
8. Competing rules
9. Schedule and contingency effects

These sources of control of instruction following are discussed in detail in the General Discussion section in the main body of this paper. In that discussion, the results of the general instructions and detailed instructions of this experiment are addressed.

The feedback package was effective in increasing the performance of all three subjects for trial $s^D$ presentation; its effects on reinforcement delivery were not completely assessed due to the end of the semester terminating the study. Although the end of the semester allowed the replication of this effect across both responses in only
one subject, the effect was also replicated across subjects for one response. Furthermore, in each case that the feedback package was used, the performance of the subject for the target response increased immediately or almost immediately to a ceiling of 100% correct. It is clear, then, that the feedback package used in this study was an effective procedure for increasing the use of specific behavioral techniques by relatively untrained persons.

The effects of the feedback package may be attributable to any of the components of the package, alone or in combination. The initial praise and final praise components may have increased the probability that the subjects would make observing responses during the feedback session. The descriptive praise component may have reinforced improved performance. The instructions and modeling sequences may have provided discriminative stimuli for improved response forms on the next opportunity to respond. Finally, the question-answer routines may have contributed to the effectiveness of the instructions and modeling sequences by increasing their precision as discriminative stimuli.

From a conceptual point of view, a component analysis of this package would be desirable, to determine the functions of the various components. A component analysis would also be desirable from an engineering point of view if the use of the present package required a large amount of time. However, in the present study, this was not found to be the case. Although data were not formally taken on the length of the feedback sessions, none exceeded 5-10 minutes in duration.

A second purpose of this study was to determine whether a system
for recording several responses concurrently could be developed, which would yield data at acceptable levels of reliability. Such a system was developed, and observers used it in this study. Due to limited resources, the experimenter assessed reliability only for the two dependent variables used in this study; however, the observers recorded data on all the responses specified in the system. The levels of reliability obtained for the dependent variables were acceptable; furthermore, it is significant that the observers obtained these levels while recording data on the other responses as well. Increased complexity of data recording procedures usually tends to decrease reliability (Kazdin, 1977). This would seem to imply that the system as a whole might be a useful and relatively accurate one, since no such decrease was seen despite the complexity involved in recording the other responses. Any such conclusions, however, cannot be made until further research is done in which reliability is assessed for all the response measures in the observation system.
APPENDIX B: EXPERIMENT II - STAFF MANAGEMENT

As the activities of mental health service delivery systems have come under public scrutiny, various governmental bodies have developed guidelines, standards, etc., in an attempt to insure the appropriateness of those activities. The courts have specified such standards in decisions in class action suits, e.g., Wyatt v. Stickney (1972); the federal government delivers or withholds funding for programs on the basis of their compliance or non-compliance with certain standards, e.g., the JCAH standards (1975); state legislatures have established such standards as public law, e.g., Michigan Mental Health Code (1974); and state departments of mental health have established administrative guidelines on the basis of such law, e.g., the Michigan Department of Mental Health Standards for Community Mental Health Services (1977).

Among the various standards and guidelines typically set forth is the commonly recurring requirement that ongoing records be kept regarding services delivered to clients, clients' progress in treatment programs, clients' general behavior, etc. Furthermore, as behavior analysts have developed service delivery systems in the area of mental health services, they have emphasized, and perhaps demonstrated the effectiveness of and the necessity for keeping accurate and ongoing client records (Harshbarger and Maley, 1976).

As a result of these trends in mental-health service delivery systems, administrators in such systems are faced with the task of developing procedures by which such relevant data may be collected, analyzed and reported, and the task of training and managing their
staffs to carry out such procedures. Indeed, insuring that this and other standards are met, by providing adequate training and supervision of staff, is considered by some to be a primary responsibility of those administrators (Martin, 1975).

As a result of this developing demand upon supervisors, researchers have begun to investigate the effectiveness of a variety of methods of developing and maintaining data collection, analysis, and reporting by staff. Epstein and Wolff (1978) report that many mental health service delivery systems have adopted a specific format to be used in maintaining client progress and service delivery records—the Problem Oriented Medical Record (POMR). Behaviorally oriented practitioners have also developed specific recording formats (Wood, Callahan, Alevijos, and Teigen, 1977). Shook, Johnson, and Uhlman (1974) report that response effort reduction has been used in attempts to improve staff performance; they also report an experimental assessment showing the limited effectiveness of such procedures in improving graphing of client progress data by staff. Researchers have also improved record keeping by staff through the use of training packages, which have included such components as modeling of the desired performance, frequent prompts for staff to imitate the modeled performance, etc. (Epstein and Wolff, 1978); researchers have also reported the use of instructional memos which describe the essential characteristics of the desired performance (Shook, et. al., 1978). Finally, researchers have reported the use of consequences to shape and maintain performance; such consequences include group feedback, individual feedback, and contingent social praise (Shook, et. al., 1978).
In the present study the experimenter attempted to address three aspects of data systems: response effort; the functionality of observation of raw data; and the effectiveness of various procedures in improving staff performance of data processing duties. He designed a set of procedures and forms for the daily collection and weekly review and reporting of information about client progress and services delivered; the procedures and forms were designed to reduce the response effort typically associated with the writing of anecdotal case notes or progress notes, while insuring that the contents of those case notes were timely, relevant, and accurate. He did not attempt to assess the extent to which the procedures and forms improved performance. Included as part of the procedure was the requirement that staff circle in red any piece of information on the raw-data sheets that should be reported in weekly case notes. The subjects' performance of this response was measured as one of the dependent variables. It was thought that such a required observing response might prove to be related to the subjects' data collection and/or data reporting behavior. The assessment of this relationship was only partially investigated. The major purpose of the study was to assess the relative effects of general instructions, detailed instructions, and feedback memos on data collection, review, and reporting by staff.
Method

Subjects

Four direct therapy staff members of a day treatment program in a community mental health center served as subjects. All of the subjects had B.A. degrees in Psychology and had a range of 1 to 7 years of experience in mental health settings, with an average of 3 years of experience.

Setting

A day treatment program in a community mental health center served as a setting for this study. Within the staff management system of the program, the staff members' primary job duties (e.g., client therapy, record keeping, etc.) were specified in terms of recurring tasks (Malott and Krumhus, 1978). These recurring tasks included the dependent variables of this study. Program supervisors periodically observed for and differentially reinforced staff task performance in a variety of ways, including assignment of credit in a performance evaluation system. The observation and recording components of the staff management system was the method for the measurement of the dependent variables of this study. The independent variables of this study were among the general staff management practices of the program, and their evaluation was done in the context of general program evaluation.

Dependent Variables

Each day, the subjects collected data in three areas: clients' progress in training and therapy programs (client progress data); the
appropriateness of clients' appearance in terms of cleanliness, attire, etc. (client grooming checklist); and unusual behavior on the part of clients (daily case note data). Every week the staff updated graphs depicting client progress data and analyzed the client grooming checklist data and the daily case note data. The subjects also wrote weekly case notes for each client, summarizing and reporting data from the data systems described above.

Prior to the onset of the study, frequently shifting therapy assignments and the related recording, graphing, and reporting of client progress data indicated that the use of those particular recurring tasks as dependent variables would make comparison between groups of variables difficult. Therefore, only the recurring tasks in the areas of the client grooming checklist (GCGL) and daily case note data (DCND) were considered as dependent variables, although staff were still responsible for client progress data tasks.

The recording of CGCL and DCND data was done on pre-printed forms, involving the completion of five component responses for the CGCL forms and six component responses for the DCND forms. Measurement of the degree of completion of these recording tasks was done in terms of the number of component responses completed. These component responses were:

1. Daily recording of Client Grooming Checklist data involved inserting the following information in provided spaces on the CGCL form:
   a. Date
   b. Client group
   c. Clients' names
   d. Insertion of a "+" (meets expectations) or "-" (needs improvement) for each checklist item for each client listed as present

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e. The initials of the person filling out the form

2. Daily Recording of Daily Case Note Data involved inserting the following information in spaces provided on the DCND form (see appendix L):
   a. Date
   b. Client group
   c. Clients' names
   d. Insertion of a "+" (meets expectations) or "-" (needs improvement) for each checklist item for each client listed as present
   e. Recording of instances of unusual behavior in the Antecedent-Behavior-Consequence format section, or checkmarking a box labeled "no unusual behavior to report"
   f. The initials of the person filling out the form.

Program policies required that these completed forms be filed in the centrally located program files by 8:30 a.m. the work day following the day on which the forms were completed.

The reviewing of CGCL data and DCND data involved the circling, with red pen or pencil, of all entries of "-" (needs improvement) on the CGCL or DCND forms, or checkmarking a box labeled "no unusual behavior to report" (DCND), or a box labeled "no problems to report" (CGCL).

The reporting of CGCL data and DCND involved commenting on the DCND and CGCL data bases in the anecdotal weekly case notes. The experimenter considered that an instance of reporting of DCND or CGCL data occurred when a subject included in a case note statement which described, or referred to, red-circled entries on a DCND or CGCL form.

Measurement

Observation. At the beginning of each work day, as clients arrived at the program site, the subjects completed the client grooming checklists, and filed them in the centrally located program files. At the end of
the day, after the clients left the program site, the subjects filed the daily case note data forms which they had completed during the day. At 8:30 a.m. of each work day, a member of the clerical staff conducted primary observations, aided by a criterion specification sheet which outlined the requirements for the completion of the various recurring tasks. She removed each file, directly observed for the completion of non-completion of each task, and replaced the file.

On each Monday, the program schedule allowed the subjects 1¼ hours to update client progress graphs and review the GCGL and DCND data forms for the preceding week; on each Tuesday, the schedule allowed the subjects 1¾ hours to write weekly case notes. At 8:30 a.m. on each Wednesday the observer removed each client case file, observed for the inclusion or non-inclusion of CGCL and DCND statements in the weekly case notes, recorded her findings, and replaced the file.

Computation. The experimenter measured the performance of each task in terms of the percentage of component responses completed per task. Following are the formulas he used to compute the percentages, and explanations of each formula.

The CGCL forms were scheduled to be completed for each working day on which client contacts were made. I computed the subjects' performance of the recurring task of CGCL recording in terms of the percentage of component responses completed:

\[
\left( \frac{\text{number of component responses completed}}{5 \text{ component responses per form}} \right) \times \frac{x}{\text{days of client contact}} \times 100 = \% 
\]

The DCND forms were also scheduled to be completed for each working day on which client contacts were made. I computed the subjects' performance of the recurring task of DCND recording in terms of the percentage of component responses completed:

\[
\left( \frac{\text{number of component responses completed}}{5 \text{ component responses per form}} \right) \times \frac{\text{days of client contact}}{x} \times 100 = \% 
\]
The number of component I responses completed I responses per form I days with client contact} X 100 = %

The number of DCND and CGCL forms to be reviewed each week was the same as the number of forms to be recorded on during the week. I computed the subjects' performance of the recurring task of reviewing in terms of the percentage of forms that were reviewed:

\[
\frac{\text{number of correctly reviewed forms}}{\text{number of forms recorded on}} \times 100 = \%
\]

The number of weekly case notes to be written, and thus, the possible number of statements regarding CGCL data and DCND data, was dependent upon the size of subject's caseload. I computed the subjects' performance of the recurring task of reporting in terms of the percentage of CGCL or DCND statements completed per week:

\[
\frac{\text{number of CGCL or DCND statements}}{\text{number of case notes due (number of clients on caseload)}} \times 100 = \%
\]

Reliability. A reliability observer conducted observations and recorded his findings for a randomly selected sample of 1/5 of the permanent products reviewed by the primary observer, after she had completed her observations. The reliability observer then compared the two sets of observations, and computed the degree of agreement using the following formula: % agreement = agreements (agreements + disagreements) X 100. Table 3 shows the results of these computations.
Table 3

A table of the ranges and arithmetic means of the percentages of agreement obtained in reliability checks in Experiment II, using the formula: % agreement = agreements / (agreements + disagreements) x 100.
<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Dependent Variable</th>
<th>% Agreement = $\frac{A}{A+D} \times 100$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$\bar{X}$</td>
</tr>
<tr>
<td>S1</td>
<td>CGCL</td>
<td>Record 96%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 98%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 95%</td>
</tr>
<tr>
<td></td>
<td>DCND</td>
<td>Record 96%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 95%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 97%</td>
</tr>
<tr>
<td></td>
<td>$\bar{X}$ across Dep. Var.</td>
<td>96%</td>
</tr>
<tr>
<td>S2</td>
<td>CGCL</td>
<td>Record 97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 98%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 98%</td>
</tr>
<tr>
<td></td>
<td>DCND</td>
<td>Record 95%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 95%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 97%</td>
</tr>
<tr>
<td></td>
<td>$\bar{X}$ across Dep. Var.</td>
<td>96%</td>
</tr>
<tr>
<td>S3</td>
<td>CGCL</td>
<td>Record 97%</td>
</tr>
<tr>
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<td></td>
<td>Review 98%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 97%</td>
</tr>
<tr>
<td></td>
<td>DCND</td>
<td>Record 95%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 97%</td>
</tr>
<tr>
<td></td>
<td>$\bar{X}$ across Dep. Var.</td>
<td>96%</td>
</tr>
<tr>
<td>S4</td>
<td>CGCL</td>
<td>Record 97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 96%</td>
</tr>
<tr>
<td></td>
<td>DCND</td>
<td>Record 96%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review 97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Report 97%</td>
</tr>
<tr>
<td></td>
<td>$\bar{X}$ across Dep. Var.</td>
<td>96%</td>
</tr>
</tbody>
</table>

Table 3

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The experimenter evaluated the effects of three staff management practices on the subjects' performance of the dependent variables. These practices were: general instructions, detailed instructions, and feedback memos. He also assessed whether changes in the data-revising response was associated with changes in the data recording or data reporting responses.

**General Instructions.** Prior to this condition, the subjects had received a series of procedure memos which had specified the dependent variables as recurring tasks, and which gave general instructions regarding the tasks. A memo reading checklist (MRCL) system required staff to date and initial on the MRCL for each memo issued, indicating the date on which they had read each memo.

**Detailed Instructions.** In this condition, the subjects received instructions which explicitly specified the component responses involved in completing CGCL and DCND forms, including a listing of all the spaces on the forms to be filled out, the kind of information to be inserted in each space, etc. The memo reading checklist system was also in effect for these instructions.

**Feedback Memos.** In this condition, the subjects received weekly memos which indicated their performance levels for the dependent variable serving as the target response for intervention at the time. These memos also identified the memo which had contained the detailed instructions for that target response.

**Experimental Design**

The experimenter assessed the relative affects of general instructions and detailed instructions, with an ABC design, replicated across...
dependent variables and across subjects; the general instructions condition lasted for two weeks, and the specific instructions condition lasted for eight weeks. (It should be noted that the original intention was to use the general instructions condition as a pre-Baseline period in which adequate levels of reliability were to be achieved prior to the implementation of a Baseline of instructions. This general instructions condition prevailed for several weeks prior to the onset of the fine grain measurement of the dependent variables and the conducting of reliability checks. Acceptably high levels of inter-observer agreement ($\bar{X} = 97\%$) during the first two weeks enabled me to implement the specific instructions condition at the end of those two weeks, which the experimenter did in order to quickly proceed to what he thought would be the actual Baseline condition.)

After eight weeks in the detailed instructions condition, he implemented the feedback memo condition, only for the dependent variable of client grooming checklist reviewing (in what was to have been the first leg of a multiple baseline design across the dependent variables of CGCL and DCND reviewing). This condition ended after eleven weeks for Subject 1, when he had to be re-assigned to other duties; it ended after five weeks for Subject 2, resigned to accept a better position; it was never implemented for Subject 3, who had to be re-assigned to other duties at the end of the specific instructions condition; and the feedback memo condition ended after twelve weeks for Subject 4, when the experiment was terminated.
Results

General Results

During the general instructions condition, acceptable levels of reliability were almost immediately achieved, and the condition ended after two weeks. As shown in Figures 13 and 14 in this condition the subjects had low to high levels of performance of the various dependent variables. In the detailed instructions condition, the subjects improved their performance of most of the dependent variables; the general exception appeared to be limited to those cases in which high performance levels occurred in the previous condition. With the implementation of the feedback memo condition for the dependent variable of client grooming checklist reviewing, the three remaining subjects improved their performance of most dependent variables, in addition to the ones directly intervened on. Although some general trends seem to be present a fair amount of variability across subjects and responses is also present.
Figure 13

Graphs of the performance levels for Subject 1 (S1) and Subject 2 (S2) in terms of the % correct component responses for: Client Grooming Checklist Reporting (CGCL REP), Reviewing (CGCL REV), and Reporting (CGCL REP); and Daily Case Note Data Recording (DCND REC), Reviewing (DCND REV), and Reporting (DCND REP). The experimental conditions are General Instructions (GI), Detailed Instructions (DET.INS), and Feedback Memos (FEEDBACK).

Note: The solid condition change lines between DET.INS and FEEDBACK indicates that FEEDBACK was implemented directly only for CGCL REV; the dotted condition change lines are added to assist assessment of any correlated effects.
Graphs of the performance levels for Subject 3 (S3) and Subject 4 (S4) in terms of the % correct component responses for: Client Grooming Checklist Reporting (CGCL REP), Reviewing (CGCL REV), and Reporting (CGCL REP); and Daily Case Note Data Recording (DCND REC), Reviewing (DCND REV), and Reporting (DCND REP). The experimental conditions are General Instructions (GI), Detailed Instructions (DET INS), and Feedback Memos (FEEDBACK).

Note: The solid condition change lines between DET INS and FEEDBACK indicates that FEEDBACK was implemented directly only for CGCL REV; the dotted condition change lines are added to assist assessment of any correlated effects.
Table 4 presents a summary of the average performance levels within each condition, and the changes in performance levels across conditions, for each dependent variable for each subject.
Table 4

A table of the: a) average percentage of component responses completed, and b) change in the average percentage, for the tasks of: a) recording, b) reviewing, and c) reporting, two kinds of client data: a) Client Grooming Checklist (CGCL) data, and b) Daily Case Note Data (DCND), across the conditions of: a) General Instructions, b) Detailed Instructions, and c) Feedback Memos.
| SUBJECT 1 | CGCL | Record | $\bar{x}$ | .38 | .55 | .77 |
| Review | $\bar{x}$ | Change | 0 | +.17 | +.22 |
| Report | $\bar{x}$ | Change | 0 | +.51 | +.13 |
| DCND | Record | $\bar{x}$ | .13 | .70 | .67 |
| Review | $\bar{x}$ | Change | - | +.57 | -.03 |
| Report | $\bar{x}$ | Change | .70 | .79 | .79 |

| SUBJECT 2 | CGCL | Record | $\bar{x}$ | .90 | .81 | 1.00 |
| Review | $\bar{x}$ | Change | 0 | -.09 | +.19 |
| Report | $\bar{x}$ | Change | 0 | +.41 | +.51 |
| DCND | Record | $\bar{x}$ | .87 | .80 | 1.00 |
| Review | $\bar{x}$ | Change | - | +.38 | +.18 |
| Report | $\bar{x}$ | Change | .56 | .71 | .87 |

| SUBJECT 3 | CGCL | Record | $\bar{x}$ | .27 | .21 | - |
| Review | $\bar{x}$ | Change | 0 | +.25 | - |
| Report | $\bar{x}$ | Change | 0 | +.08 | - |
| DCND | Record | $\bar{x}$ | .32 | .17 | - |
| Review | $\bar{x}$ | Change | - | -.06 | - |
| Report | $\bar{x}$ | Change | 0 | +.51 | - |

| SUBJECT 4 | CGCL | Record | $\bar{x}$ | .84 | .93 | .82 |
| Review | $\bar{x}$ | Change | 0 | +.09 | -.11 |
| Report | $\bar{x}$ | Change | 0 | +.33 | +.38 |
| DCND | Record | $\bar{x}$ | .41 | .62 | .87 |
| Review | $\bar{x}$ | Change | .12 | .40 | .73 |
| Report | $\bar{x}$ | Change | 0 | +.28 | +.33 |

Table 4

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Specific Results

General Instructions. During the two-week general instructions condition, subjects achieved low to high levels of performance. Three subjects (S1, S2, and S3) exhibited moderate levels of performance for DCND review; two subjects (S1, S2) exhibited high levels and two subjects (S3 and S4) exhibited moderate levels of performance for DCND recording; two subjects (S2 and S4) exhibited high levels of performance for CGCL recording; one subject (S2) exhibited low-to-high trends in performance level, for CGCL reporting and DCND reporting; there were low performances for all subjects for CGCL reviewing.

On the other hand, low levels of performance may also be seen in eleven of the subjects' baselines. All subjects exhibited low performance levels for CGCL review; three subjects (S1, S3, and S4) exhibited low performance levels for DCND reviewing; two subjects (S1 and S3) exhibited low performance levels for CGCL recording; one subject (S1) exhibited a low performance level for CGCL reporting; one subject (S4) exhibited low performance levels for DCND reviewing; and none of the subjects exhibited low performance levels for DCND recording.

Detailed Instructions. The detailed instructions condition lasted for a period of eight weeks. During this condition the subjects' performance levels improved on fourteen of the twenty-four baselines. Three subjects (S1, S3, and S4) exhibited increased performance levels for CGCL reporting and DCND reporting; two subjects (S1 and S3) exhibited increased performance levels for CGCL recording; and one subject (S4) exhibited performance increased for DCND recording and DCND reviewing.
Improvement in performance levels was not significant for subjects' baselines. The performance of three S3 did not improve for DCND recording; two did not improve for CGCL recording; and one subject for CGCL reporting and DCND reporting.

Feedback Memos. The feedback memo condition in instructions condition for three of the four men condition lasted for eleven weeks for S1, zero weeks for S3, and twelve weeks for S4.

In the feedback memo condition, the performance of the three remaining subjects (S1 and S2) increased target response for which the feedback memos implementation of this condition resulted in level which was also a reversal of a downward trend in the previous condition.

Additional Effects. The feedback memo some effect on baselines other than the one (CGCL reviewing).

For S1, implementation of this condition performance levels for three of the five remaining recording, DCND reviewing, and DCND reporting also reversals of downward trends ongoing in For S2, implementation of this condition also performance level for all of the remaining variability of performance for all of the remaining base implementation of this condition resulted in two of the five remaining baselines (DNCD rec

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DISCUSSION

The effects of general instructions and detailed instructions were mixed, across conditions, subjects, and responses. These mixed results may be attributed to several sources of control:

1. The completeness and specificity of the instructions
2. Whether the subjects attended to the instructions
3. Whether the subjects acquired the content of the instructions
4. Reinforcement history
5. Whether instruction following was under stimulus control
6. Motivational variables
7. Whether subjects self-stated instructions prior to performance
8. Competing rules
9. Schedule and contingency effects.

These sources of control of instruction following are also discussed in the General Discussion section in the main body of this paper.

Feedback memos were effective in increasing the subjects' performance of CGCL reviewing, the target response intervened upon. However, performance also improved on ten of the sixteen remaining baselines. This could be attributed to three processes or effects: response generalization; effects of the increased observing response; and generalized rule control.

It may be that data recording, data reviewing, and data reporting are members of the same response class. In that case, the reinforcement of one of the members could be expected to strengthen other members of
the class. This is possible since recurring tasks in general comprised a response class maintained by consequences provided by the staff management system. In any case, it is probable that CGCL and DCND reviewing were members of a response class of "reviewing responses," and the implementation of the feedback memos on the CGCL reviewing was responsible at least in part for the strengthening of the DCND reviewing seen in all three cases.

Another possibility is that the increased observing response, which resulted from the feedback memos, increased the CGCL recording response as an earlier link in a chain, and/or facilitated the CGCL reporting response as a later link in a chain, by informing the subjects what reporting responses to make. Since the effects of the feedback memos probably generalized to the DCND reviewing response, similar processes could have been involved with the DCND recording and DCND reporting responses.

Finally, the detailed instructions may be seen as rules. The initial increases in performance may be seen as the result of generalized rule control, and the eventual downward trends as weakening rule control resulting from lack of consequences for rule following in that situation. Thus, the feedback memos for following the rule regarding CGCL reviewing may also have strengthened generalized rule following, resulting in increased rule control of the other responses.

The experimental design as planned (implementation of the feedback memos across CGCL reviewing and DCND reviewing) might have provided information which would have allowed assessment of the tentative explanations of the additional effects of the feedback memos which
were offered above. Unfortunately, premature termination of the study due to changes in the staffing plan in the setting prevented the completion of this assessment. Future research might be addressed specifically to the investigation of the effects of the observing response.
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