DEVELOPING A DURABLE INTERVENTION:

TEACHING MEMBERS OF A STUDENT COOPERATIVE TO CHAIR MEETINGS

by

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Abstract

The purpose of this study was to evaluate procedures for teaching members of a student cooperative to run meetings with little or no assistance from the Experimenter. Experiment 1 evaluated the performance of seven meeting chairpersons with and without training and coaching by the Experimenter. Chairpersons completed more of their assigned tasks when the Experimenter was coaching than when he was not. Meeting efficiency and member satisfaction were both better when the Experimenter was coaching. Experiment 2 studied the effects of a maintenance package on chairperson performance in the absence of training and coaching by the Experimenter. The maintenance package included a training manual, a prompting checklist, and performance reviews by another member of the cooperative. Chairperson performance, meeting efficiency, and member satisfaction were all consistently better when the maintenance package was used. Experiment 1 highlights the need for experimenters to analyze their own roles in the interventions they design. Experiment 2 suggests one method for reducing the involvement of the experimenter while maintaining the effectiveness of an intervention.

Meetings are an important part of virtually all organizations. They provide a forum for individuals to work collectively to solve common problems and to make decisions that affect all members of the group. Sometimes group members must be taught special skills before they can participate in meetings effectively.

Briscoe, Hoffman, and Bailey (1975) used individual role-play training during a period immediately preceding weekly meetings to teach members of a board for a low-income, self-help group to make three different types of problem solving statements: stating the problem, identifying solutions, and recommending action. Expert judges rated videotapes of meetings of the board as showing greater problem solving skill following training in two of three taped comparisons.

In another study, Seekins, Mathews, and Fawcett (1983) used an eight-chapter, programmed training manual, scripted role-play training, and a prompting checklist to teach two elected chairpersons on a similar board to open meetings, lead discussion, lead problem solving, and close meetings. Following training, the number of agenda items reaching closure increased nearly threefold.

These two studies, although effective in changing the behavior of the meeting participants, have a similar limitation. In both, the experimenters conducted the training. It is not clear that new members could learn the necessary skills without the experimenters' help. In fact, the results of the Briscoe et al. (1975) study show that each member had to be taught each skill independently. It is

doubtful that the participants in either of these groups could afford to hire the experimenters to conduct training each time new members (or chairpersons) join them. If the effectiveness of the training procedures are, in fact, dependent on training by the experimenters, then they are not practical solutions to the problem of teaching people to participate in meetings.

The two experiments reported in this paper took place during meetings in another low-income group, a student housing cooperative. Building upon the work of Briscoe and his colleagues and Seekins and his colleagues, the author designed a set of meeting procedures that reduced the need for complex discriminations by the meeting participants. To make it easy for members to discriminate between the different stages of problem solving (Briscoe et al., 1975), the meetings were divided into segments corresponding to the major stages of problem solving. To make it easy for the chairperson to direct the flow of meetings (Seekins et al., 1983), the chairperson duties were arranged in a linear sequence. Steps not required during particular meetings were abbreviated rather than eliminated entirely thus removing the need to teach each chairperson to make discriminations on which steps to include. In addition, discussion on each agenda item was limited by a timer thereby removing the need for complicated rules and procedures for ending discussion. To the extent possible, the procedures were designed to take advantage of "natural communities of reinforcement" (Baer, 1981; Baer & Wolf, 1970) at meetings and within the cooperative. See Appendix A for a complete description of the meeting procedures.

Because chairpersons directed the meetings, it was important for them to perform their duties reliably. When Experiment 1 began, the experimenter was responsible for training and coaching chairpersons. The purpose of Experiment 1 was to determine the degree to which the performance of the meeting chairpersons was dependent on training and coaching by the experimenter.

Experiment 1

Method

Setting

Experiment 1 took place during weekly membership meetings in a 30-member student housing cooperative in Lawrence, Kansas (see Miller, 1976). The members were responsible for doing most of the work involved in running the cooperative. A token-based worksharing system ensured that all members did their fair share of the work (Feallock & Miller, 1976). All members were expected to attend weekly meetings to help solve problems and make decisions regarding the operation of the cooperative. Credits exchangeable for rent reductions were awarded for all work in the cooperative including attending meetings.

Meetings were held in the house lounge during the hour before and hour after dinner each Monday evening. The lounge was large enough for all members to sit around the perimeter of the room.

Participants

The participants in this experiment were seven members of the cooperative (three females and four males) who volunteered to serve two-week terms as meeting chairperson during the fall semester of 1982. Chairpersons served in the order in which they volunteered; this was standard practice for the cooperative prior to the experiment. Chairpersons ranged in age from 19 to 30 with academic majors as varied as the general university population. They had been members of the cooperative an average of 6 months (range - 2 to 15).

Operational Definitions

Chairperson performance. The primary dependent variable was the percentage of chairperson tasks performed correctly each meeting. Chairpersons had an average of 200 individual tasks to perform each meeting. Each task fell into one of 12 major areas of responsibility:

1. Preparing for problem solving
2. Constructing a list of issues
3. Assigning committees and chairpersons
4. Preparing for the business meeting
5. Requesting approval of the job sign-up sheets
6. Moderating announcements
7. Moderating reports
8. Constructing a list of proposals
9. Moderating discussion of proposals

10. Requesting extensions

11. Closing the meeting

12. Completing the meeting records

The primary observer was not a member of the cooperative but had attended meetings continuously for approximately one year prior to this experiment. He directly observed and recorded chairperson performance (see Table 1).

A second observer independently recorded chairperson performance once during each experimental condition. The two observers' records were compared item-by-item following each meeting to assess their reliability. Agreements were scored when both observers agreed that the opportunity for a particular chairperson task arose and they agreed that it was or was not performed correctly. Reliability was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. Reliability averaged 89% (range - 87% to 92%).

Meeting efficiency. A measure of meeting efficiency was calculated by dividing the number of minutes each meeting lasted by the number of proposals reaching closure (passed, failed, or dropped). Lower scores indicate better efficiency.

Procedure

The experimenter gave each new chairperson a copy of the Meeting Chairperson Job Description at least 3 days before his or her first meeting. The 3-page job description outlined all the major chairperson duties (see Table 2). The day before each new

Table 1

Sample Items from Chairperson Observation Checklist

3. Assigning Committees & Chairpersons

_____ 3.1 Read complete list of issues. (Default on "complete")

_ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ 3.2.1 Read title of each issue again.

_ _ _ _ _ _ _ _ _ 3.2.2 Requested chair for each.

_ _ _ _ _ _ _ _ _ 3.2.3 Tabled those without chair.

_ _ _ _ _ _ _ _ _ 3.3.1 Requested committee members.

_ _ _ _ _ _ _ _ _ 3.3.2 Tabled those w/o 2 add'l members.

_ _ _ _ _ _ _ _ _ 3.4 Asked for loc. on "live" issues.

_____ 3.6.1 Announced start of committee meetings.

_____ 3.6.2 Announced time until dinner. (not just time)

_____ 3.7.1 Placed agenda on (double-wide) meeting clipboard.

_____ 3.7.2 Returned clipboard to bulletin board.

_____ 3.8 Completed above items by 5:50pm.

Table 2

Sample Items from Chairperson Job Description

6 Moderate Announcements & Coordinator Reports

6.1 Ask if anyone will be signing for jobs for another member.

6.2 Ask the Credit Recorder for this week's approximate credit bonus.

6.3 Invite members to make announcements or coordinator reports; begin with those on the agenda; record titles and members' names on the agenda.

6.4 Interrupt and ask for a summary if the Scribe calls time.

6.5 Interrupt again if summary drags on; invite member to table the issue until the end of the meeting; record title and the member's name under "others" if tabled.

6.6 Complete 6.1 - 6.5 by 7:10pm Monday (or w/i 15 min. of start).

chairperson's first meeting, the experimenter met with him or her for approximately one hour to explain all the chairperson duties and to answer questions. The experimenter followed a detailed outline during the training sessions (see Table 3).

During meetings, the experimenter prompted chairperson behavior, answered procedural questions, and corrected chairpersons when they made important errors. He also recorded the number of times he, or other members, coached chairpersons during meetings. Coaching included prompting, answering procedural questions, and correcting errors. Reliability was assessed by having a second observer independently record coaching episodes during one meeting in each experimental condition. Reliability was calculated by dividing the smaller number of coaching episodes by the larger and multiplying by 100%. Reliability averaged 90% (range - 86% to 93%).

Experimental Design

The experimental design consisted of three conditions.

Experimenter coaching. During the first 3 weeks of the experiment, chairpersons were trained and coached by the experimenter as described above.

No experimenter coaching. During the next 7 weeks, chairpersons received a copy of the Meeting Chairperson Job Description but no training or coaching from the experimenter. Instead, each new chairperson was referred to the previous chairperson for training and assistance.

Table 3

Sample Items from Training Outline Used by the Experimenter in Experiment 1

1. Preparation: If you are prepared everything seems to flow smoothly. If you're not, you always feel like you are trying to catch up. Give yourself about 15 minutes for the first meeting; you will probably be able to prepare in 5 minutes or less your second meeting.

    1.1 Move the furniture to outside walls; maybe even move some out of the meeting area.

    1.2 The agenda is your organizer; it guides you through the meeting. There may already be some information on it when you pick it up.

    1.3 The Tabled Issues List is on the proposal clipboard; it is used to keep track of tabled issues, but it also prevents us from being overloaded with issues that have only marginal importance. (Explain how it is used.)

    1.4 Removing the telephone receiver from the hook helps minimize interruptions.

    1.5 Ring the bell a few minutes early so everyone has time to get organized before the meeting starts; but don't ring it too early or members will begin to take their time getting to the meeting area.

    1.6 Starting on-time seems to encourage members to be conscious of the time they are taking with all meeting activities; starting late seems to insure the meeting will drag; please DO start on-time.

Experimenter coaching. During the final 3 weeks, the experimenter resumed his training and coaching role.

Thus, a B-A-B withdrawal design was used (Hersen & Barlow, 1976).

Social Validity

At the end of every meeting, members rated chairperson performance. Members circled a number on a scale from 7 (very satisfied) to 1 (very unsatisfied) to answer the question: "Overall, how satisfied are you with the chairperson's performance this week?"

Results

Coaching During Meetings

Figure 1 shows the number of coaching episodes during each meeting in all three conditions of the experiment. This figure shows that the experimenter followed the intended procedure with the exception of the few occasions on which members requested information from him during the no-coaching condition. This figure also shows that when the experimenter was not coaching other members in the group increased the amount of coaching they did.

Chairperson Performance

Figure 2 shows the percentage of chairperson tasks performed correctly during every meeting in all experimental conditions. During the first 3 weeks, when the experimenter was serving as

Figure 1. Number of coaching episodes during each meeting in all three experimental conditions in Experiment 1 (E = Experimenter).

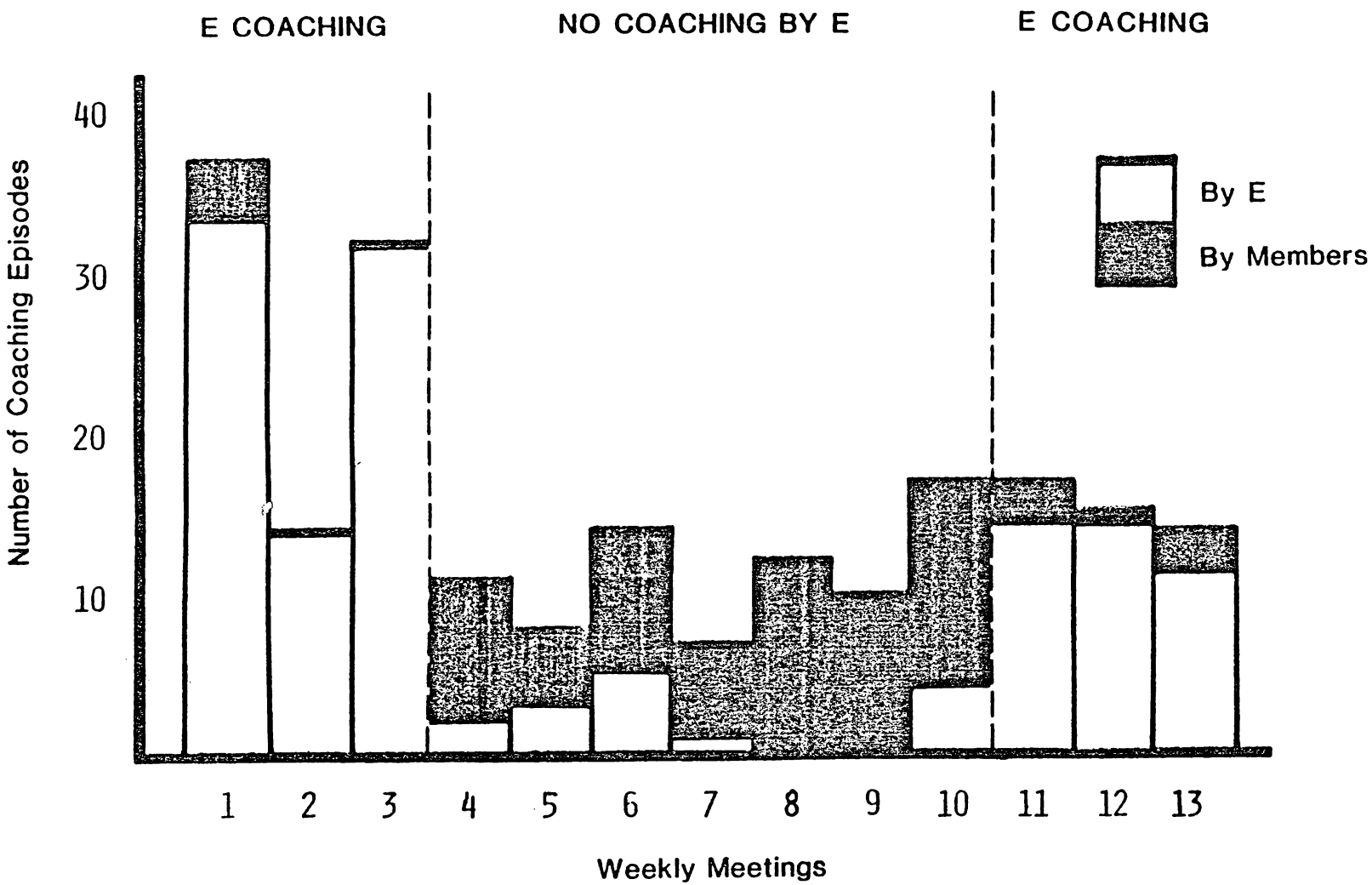
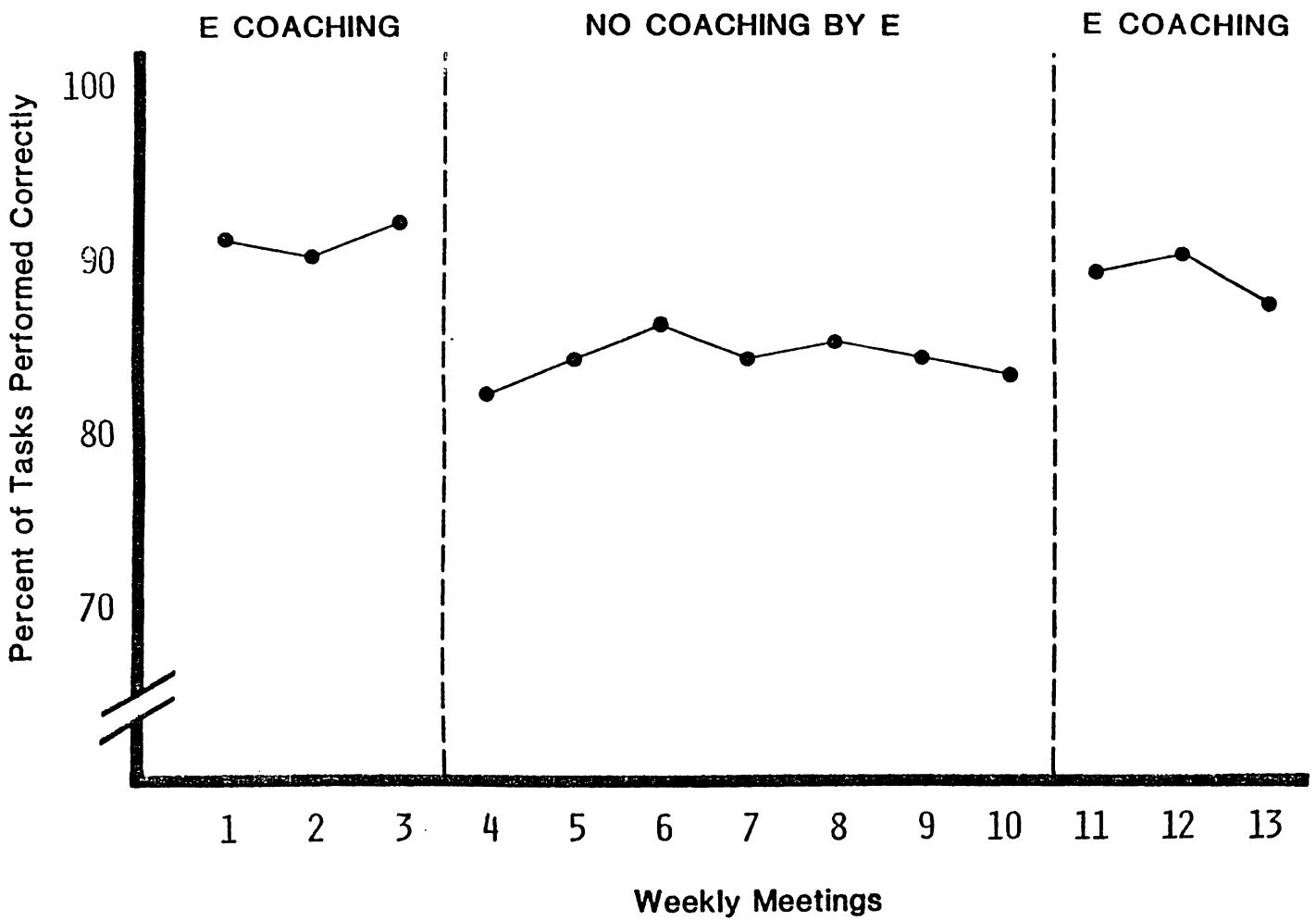

E COACHING
NO COACHING BY E
E COACHING
Number of Coaching Episodes
40
30
20
10
By E
By Members
1
2
3
4
5
6
7
8
9
10
11
12
13
Weekly Meetings

Figure 2. Percent of chairperson tasks performed correctly during each meeting in all experimental conditions in Experiment 1 (E = Experimenter).


E COACHING
NO COACHING BY E
E COACHING
Percent of Tasks Performed Correctly
100
90
80
70
1
2
3
4
5
6
7
8
9
10
11
12
13
Weekly Meetings

trainer and coach, chairperson performance averaged 91%. During the middle 7 weeks, when training and coaching were left to the previous chairpersons, performance fell to a mean of 84%. During the final 3 weeks, when the experimenter was again training and coaching chairpersons, performance increased to a mean of 89%. Chairperson performance was consistently higher when the experimenter was training and coaching with no overlap in the levels of performance across experimental conditions.

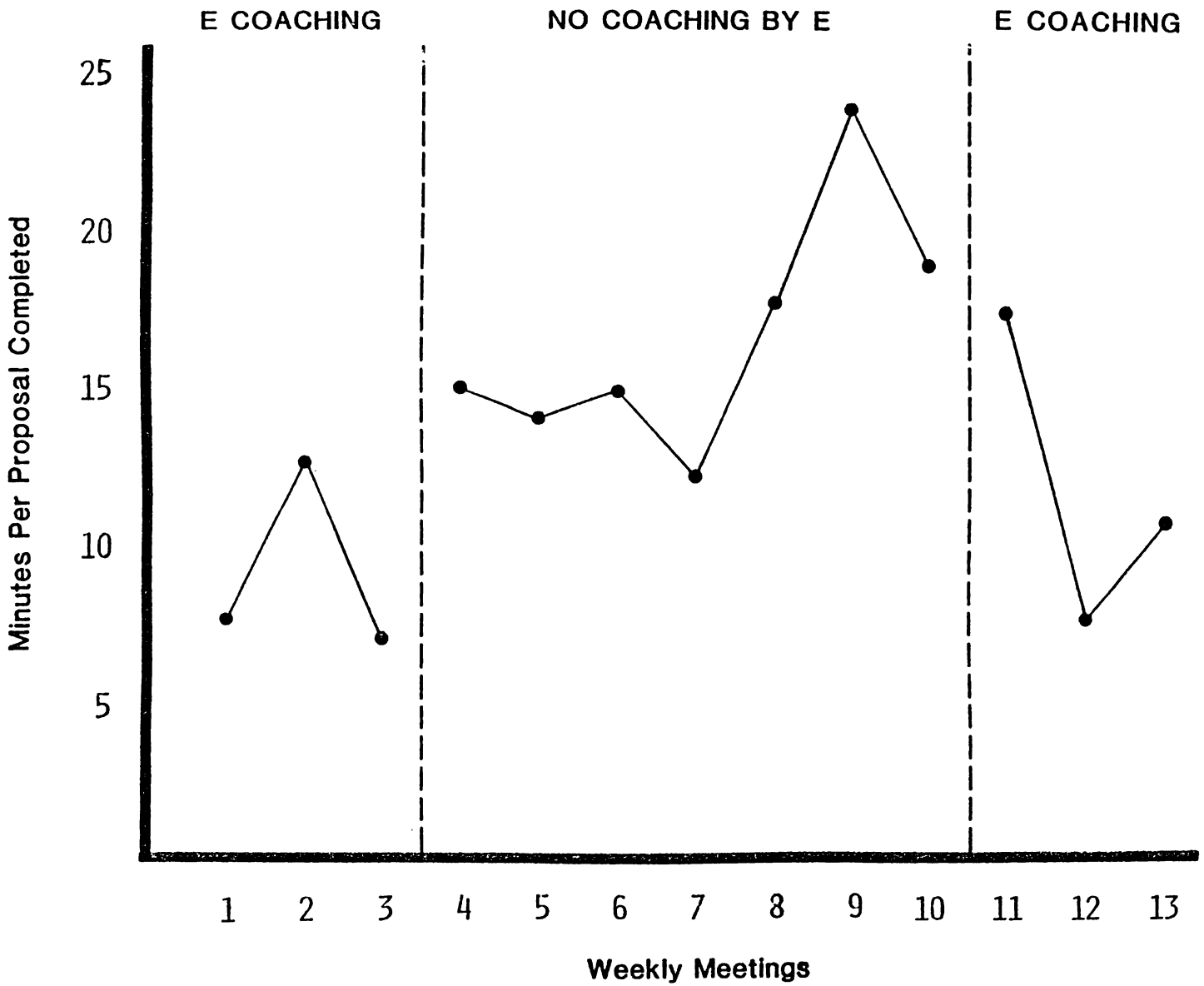
Meeting Efficiency

The measures of meeting efficiency during each experimental condition are shown in Figure 3. During the first experimenter coaching condition, efficiency averaged 9 minutes per proposal reaching closure. During the condition in which coaching was left to the previous chairpersons, efficiency averaged 16.5 minutes per proposal. During the final experimenter coaching condition, efficiency averaged 12.3 minutes per proposal. Meeting efficiency was substantially better when the experimenter was training and coaching chairpersons.

Social Validity

Member ratings of chairperson performance averaged 5.8 (on a 7-point scale) during the first condition, 5.6 during the middle condition, and 6.2 during the final condition. Members rated chairperson performance moderately higher when the experimenter was serving as trainer and coach.

Figure 3. Number of minutes per proposal reaching closure (efficiency) during meetings in all experimental conditions in Experiment 1 (E = Experimenter).


E COACHING
NO COACHING BY E
E COACHING
Minutes Per Proposal Completed
25
20
15
10
5
1
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11
12
13
Weekly Meetings

Discussion

Experiment 1 evaluated the effects of coaching by the experimenter on the performance of meeting chairpersons in a student cooperative. Chairperson performance was consistently better when the experimenter was coaching. The reduction in performance when coaching was removed followed by the increase in performance when coaching was reinstated suggests that coaching by the experimenter, and not other uncontrolled variables, was responsible for the changes in performance. The substantial changes in meeting efficiency and moderate changes in satisfaction ratings that occurred with changes in the experimental conditions suggest that coaching by the experimenter improved efficiency and satisfaction as well as chairperson performance.

The experimenter had designed the meeting procedures with the hope that the members of the cooperative would be able to learn and manage the procedures effectively on their own. The results of Experiment 1 showed that good performance by meeting chairpersons, meeting efficiency, and member satisfaction depended on training and coaching by the experimenter. Something else was needed if the members were to learn to chair meetings effectively without the experimenter's assistance.

Seekins et al. (1983) included two components in their procedures for training meeting chairpersons that did not necessarily require the direct involvement of the experimenters: a programmed training manual, and a prompting checklist for the

chairperson to use during meetings. We developed a similar training manual and checklist for our procedures and added performance reviews by another member of the cooperative. These three additional components formed a "maintenance package" intended to replace training and coaching by the experimenter. Experiment 2 evaluated the effectiveness of the maintenance package in maintaining chairperson performance in the absence of training and coaching by the experimenter.

Experiment 2

Method

Setting & Participants

Experiment 2 took place during the spring semester of 1983 in the same student cooperative described in Experiment 1. Meetings again occurred weekly during the hour before and hour after dinner.

The participants for Experiment 2 were the eight members of the cooperative (four males, four females) who volunteered to serve 2-week terms as meeting chairperson. None of the members who served as chairpersons during Experiment 1 served as chairpersons during Experiment 2. Every 2 weeks a new chairperson was randomly selected from the list of members who had volunteered at the beginning of the semester. The volunteers ranged in age from 19 to 45 and had academic majors as varied as the general university population. They had been members of the cooperative an average of 8 months (range - 2 to 28).

Operational Definitions

Chairperson performance. The primary dependent variable for this experiment was the same as for Experiment 1, the percentage of chairperson tasks performed correctly. The number of tasks required each meeting again averaged 200. The observation and reliability calculation procedures used for Experiment 1 were also used for this experiment. Reliability on chairperson performance averaged 94% (range - 90% to 97%).

Meeting efficiency. The same measure of meeting efficiency used for Experiment 1 was used for Experiment 2 -- the number of minutes each meeting lasted divided by the number of proposals reaching closure.

Procedure

The experimenter developed a set of documents and procedures designed to permit another member of the cooperative, a Meeting Coordinator, to teach chairperson behavior reliably. This set of documents and procedures, called the maintenance package, included three major components. First, the experimenter wrote a 60-page training manual to teach chairpersons their duties and the rationales for each duty. The manual included 12 chapters each corresponding to one of the chairperson's major responsibilities. A set of study questions at the end of each chapter directed the trainee's study. After each trainee read the manual and answered the study questions, the Meeting Coordinator graded the study question answers. The trainee was required to score at least 90%

on the study questions. Then the Meeting Coordinator gave the trainee a written mastery test consisting of "situational examples" (see e.g., Mathews & Fawcett, 1976; Miller & Weaver, 1975) that required the trainee to describe what he or she should do as meeting chairperson. A score of at least 90% was required to pass the mastery test. All trainees scored 90% or better on their first attempts on the study questions and the mastery test.

The second component of the maintenance package was a prompting checklist for chairpersons to use during meetings (see Table 4). The 2-page checklist included abbreviated listings of each chairperson duty. Chairpersons were instructed to check-off each item as they completed it.

The third component included an inspection checklist used by the Meeting coordinator to observe and record chairperson performance during meetings. At the end of every meeting, the Meeting Coordinator discussed the strong and weak aspects of performance with the chairpersons. The performance review sessions were not observed formally but casual observations suggested that they never lasted more than 10 minutes and were generally positive and constructive.

The experimenter again recorded the number of times he, or other members, coached chairpersons during meetings. As in Experiment 1, coaching included prompting, answering procedural questions, and correcting errors. A second observer independently

Table 4

Sample Items from Prompting Checklist Used by Chairpersons in Experiment 2

10. Request time for Extension

_____ Read list of tabled (T;) items; If none, go to "Closing...."

_____ Announce time

_____ Ask each chairperson for consequences (1 sentence)

_____ Conduct vote to extend for each tabled item (7 min. ea.)

_____ Record "Tabled" for each that does not pass (<51%)

_____ Read the list of items that will be reconsidered

_____ Repeat "Moderate Discussion...." for each item that passes

_____ Repeat "Request Time...." after each "round"

observed coaching during one meeting in each condition. Reliability was calculated by dividing the smaller number of coaching episodes by the larger and multiplying by 100%. Reliability averaged 91% (range - 87% to 93%).

Experimental Design

The experimental design consisted of three conditions.

Maintenance package. All three components of the maintenance package -- training with the manual, the prompting checklist, and observations and performance reviews by the Meeting Coordinator -- were in-use during the first 4 weeks of the experiment.

No maintenance package. During the next 6 weeks, the components of the maintenance package were removed and the Meeting Coordinator given a vacation. New chairpersons received the same 3-page job description used in Experiment 1 and were referred to the previous chairperson for training and assistance.

Maintenance package. During the final 4 weeks, the maintenance package was reinstalled and the Meeting Coordinator reinstated.

Again, a B-A-B withdrawal design was used.

Social Validity

The same social validity measure was used for this experiment -- ratings of overall chairperson performance following each meeting.

Results

Coaching During Meetings

Figure 4 shows the number of coaching episodes during meetings in all three conditions. This figure shows that as intended, the experimenter coached little or none during all three experimental conditions. It also shows that other members increased the amount of coaching they did when the maintenance package was removed.

Chairperson Performance

Figure 5 shows the percent of chairperson tasks completed during each meeting in all experimental conditions. During the first 4 weeks, when the maintenance package was in use, chairperson performance averaged 95%. When the maintenance package was removed during the middle 6 weeks, performance fell to an average of 84%. Finally, when the maintenance package was reinstated, chairperson performance increased to a mean of 96%. Performance was consistently higher when the maintenance package was in effect. Again, there was no overlap in the levels of performance across experimental conditions.

Meeting Efficiency

The effects of using the maintenance package on meeting efficiency are shown in Figure 6. The number of minutes per proposal reaching closure averaged 12.5 during the first condition, 12.8 during the middle condition, and 7.8 during the final condition. Efficiency was moderately better when the maintenance

Figure 4. Number of coaching episodes during each meeting in all experimental conditions in Experiment 2 (E = Experimenter).

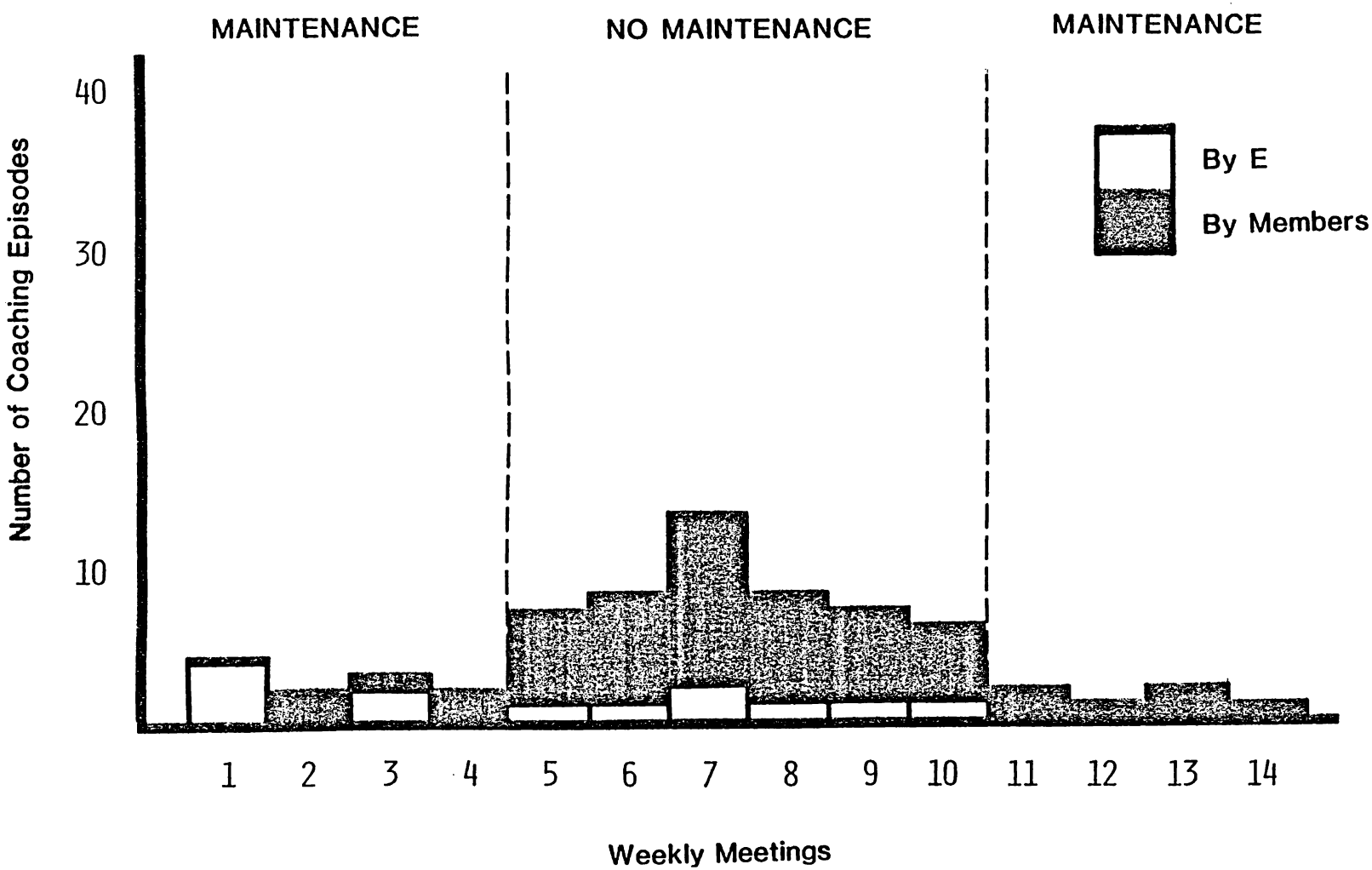
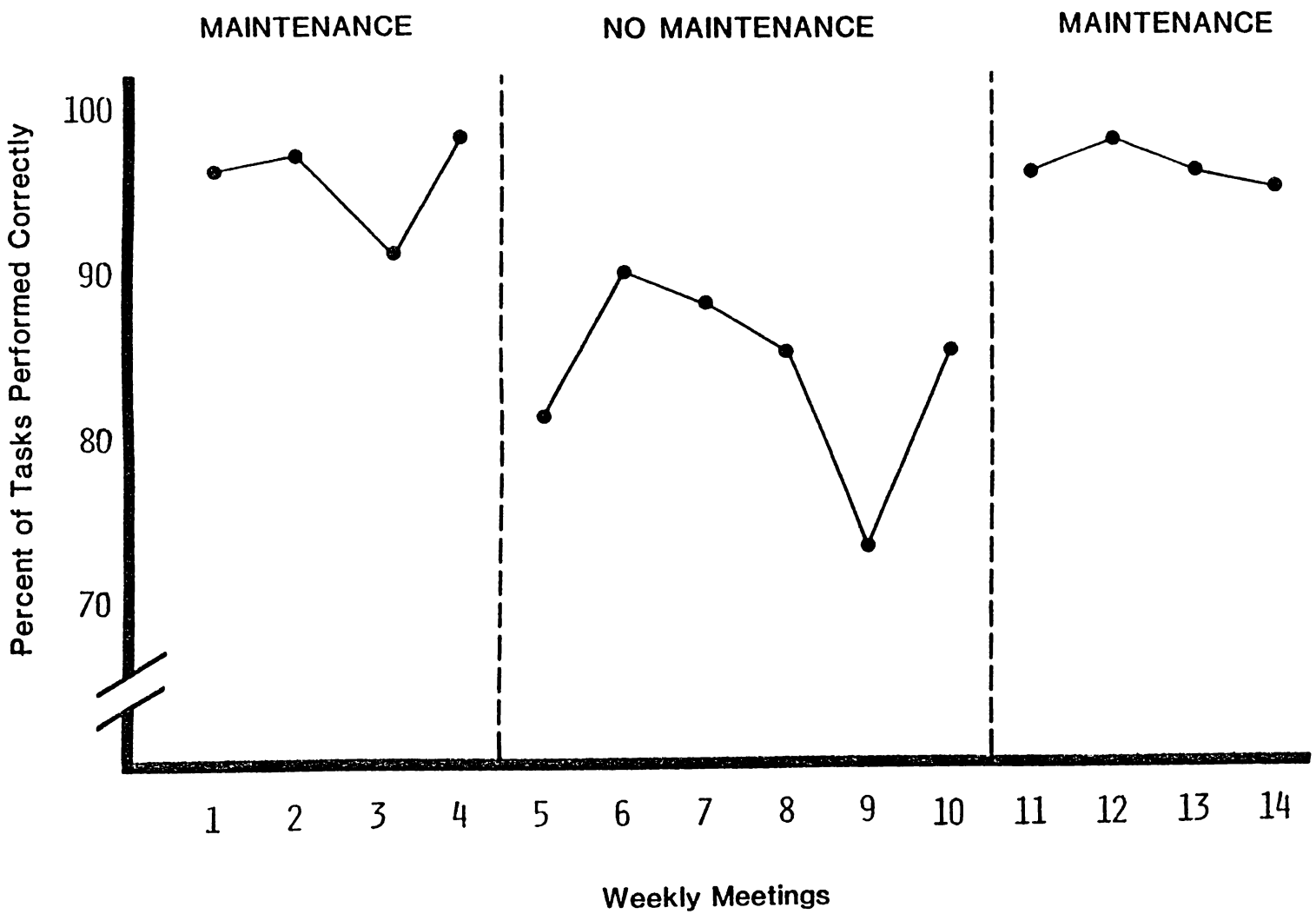

MAINTENANCE
NO MAINTENANCE
MAINTENANCE
Number of Coaching Episodes
40
30
20
10
By E
By Members
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Weekly Meetings

Figure 5. Percent of chairperson tasks performed correctly during each meeting in all experimental conditions in Experiment 2.


MAINTENANCE
NO MAINTENANCE
MAINTENANCE
100
90
80
70
Percent of Tasks Performed Correctly
1
2
3
4
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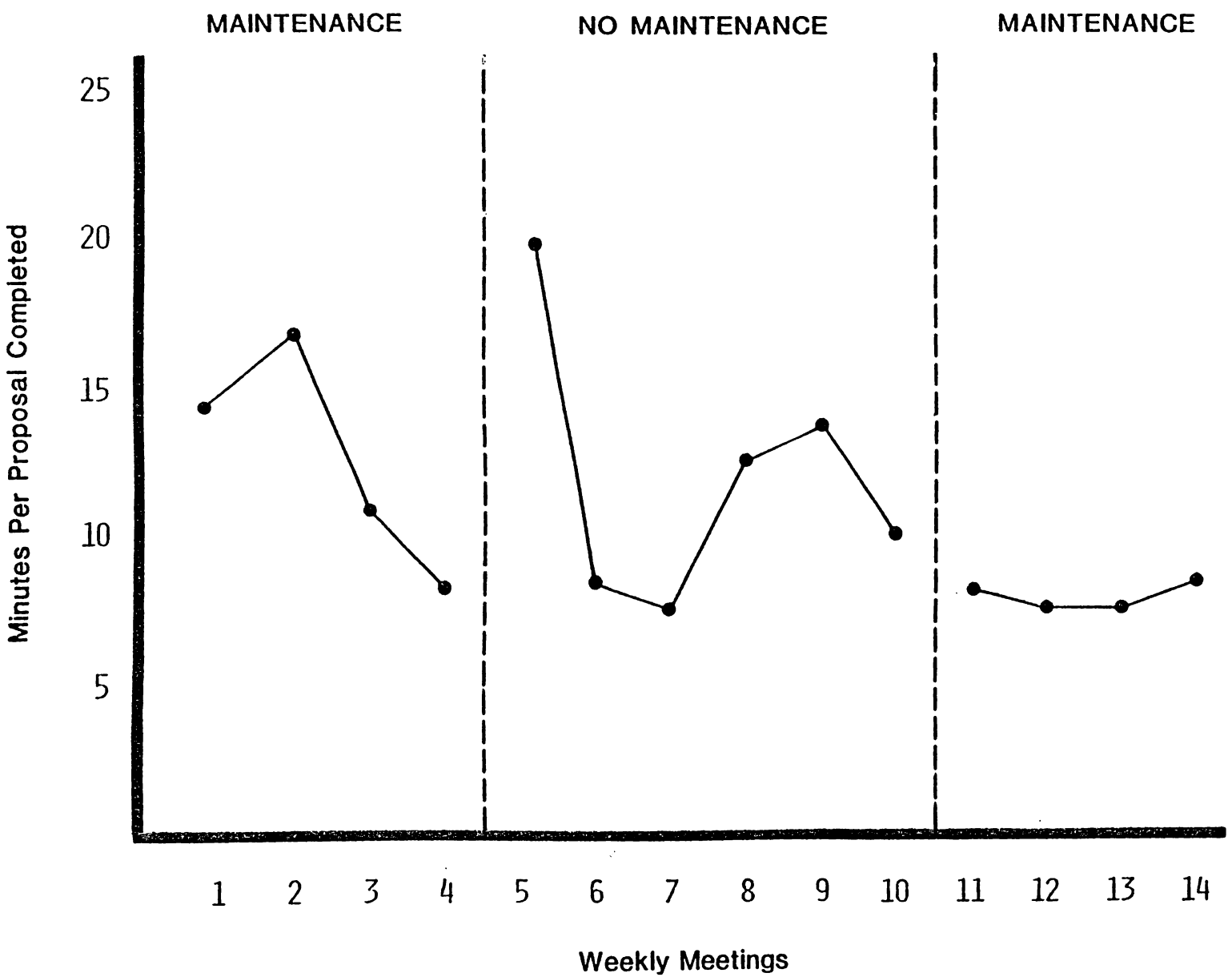
13
14
Weekly Meetings

Figure 6. Number of minutes per proposal reaching closure (efficiency) during meetings in all experimental conditions in Experiment 2.


MAINTENANCE
NO MAINTENANCE
MAINTENANCE
25
20
15
10
5
Minutes Per Proposal Completed
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Weekly Meetings

package was in effect but there was considerable overlap in efficiency levels across experimental conditions.

Social Validity

Ratings of chairperson performance averaged 6.3 during the first condition, 5.1 during the middle condition, and 6.2 during the final condition. Members rated chairperson performance more than one point higher during the conditions in which the maintenance package was in effect.

Discussion

Experiment 2 evaluated the effectiveness of a maintenance package on the performance of meeting chairpersons in a student cooperative. Chairperson performance was consistently higher when the maintenance package was in effect. The reduction in performance when the maintenance package was withdrawn and the subsequent improvement when it was reinstated suggests that the maintenance package, and not other, uncontrolled variables was responsible for the higher levels of chairperson performance. Moderate changes in meeting efficiency and substantial changes in member satisfaction across experimental conditions suggests that the maintenance package produced changes in chairperson performance that were important to the members attending meetings.

General Discussion

Experiment 1 showed that coaching by the experimenter was important to chairperson performance in the student cooperative meetings. When the experimenter was not coaching, chairperson performance, meeting efficiency, and member ratings were all notably worse. Experiment 2 showed that a member of the cooperative, when provided with a training manual, a checklist, and an inspection record for teaching, prompting, observing, and reviewing chairperson performance, could produce performance, efficiency and rating measures at least as good as those achieved with experimenter coaching. The maintenance package effectively replaced training and coaching by the experimenter.

Chairperson Performance

The results of this study confirm the conclusions of earlier studies --- members of a group meeting can be taught behaviors that contribute to meeting efficiency. The level of chairperson performance achieved in this study is comparable to that achieved by Seekins et al. (1983). However, the procedure used here required no role-playing, a time consuming and expensive component of training programs. Criterion performance was achieved with 2 to 3 hours training per chairperson as reported by those who trained in the maintenance-package condition. This is approximately one-sixth the time required to train chairpersons in the Seekins et al. (1983) study and one-third the time required to train participants in the

Briscoe et al. (1975) study. Perhaps even more important, none of the training in the maintenance conditions of this study directly involved the experimenter while all or nearly all training in the earlier studies was conducted by the experimenters.

The difference in training required could be due to a difference in the target populations. This experiment was conducted with university students while Seekins et al. and Briscoe et al. worked with non-university populations. University students may simply learn formal meeting procedures more readily. But it is also possible that the simplified procedures the experimenter designed for this cooperative were easier to learn and operate than the procedures used in the two earlier studies. Conclusions on this issue must await a direct comparison of the different procedures in a single experiment.

Chairperson performance during the two withdrawal conditions was nearly identical during both experiments (84%). However, performance averaged higher under the maintenance conditions (95%) than under the coaching conditions (90%). Although conclusions must be tentative because the two procedures were not compared directly, these results do suggest that the maintenance package was more effective than coaching in producing the targeted performance. It could be that a programmed approach to training, using local staff, is actually more effective. Further research is warranted.

Meeting Efficiency

Although the mean efficiency score for the two coaching conditions in Experiment 1 was nearly identical with the mean for the two maintenance conditions in Experiment 2 (10.6 versus 10.2), efficiency during the withdrawal conditions differed markedly (16.5 versus 12.8). One explanation for this discrepancy might be that the meetings during the withdrawal condition in Experiment 1 were more difficult to chair than those during the withdrawal condition in Experiment 2. For that matter, perhaps all meetings during withdrawal conditions were more difficult to chair than meetings during the intervention conditions.

Meeting difficulty is hard to judge, at least in part, because it is hard to separate the content and the actions of other members from the performance of the meeting chairperson. However, we asked members to estimate the difficulty of chairing each meeting following every meeting. They rated all conditions nearly the same throughout both experiments (4.1 - 4.6, on a 7-point scale) with the exception of the first maintenance condition in Experiment 2 which they rated as more difficult (5.1). Difficulty, at least as operationalized in this study, does not explain the differences in efficiency scores.

Another possible explanation is that improvements in chairperson performance actually decreased meeting efficiency, but this seems unlikely. More likely, the members, having participated in meetings during Experiment 1, were less inclined to allow

meetings to wander "out-of-control" perhaps because they understood the consequences for doing so --- longer, less efficient meetings. Perhaps members kept meetings efficient during Experiment 2 in spite of poor chairperson performance during the withdrawal condition. If this is true, it suggests an opportunity to further exploit "natural" contingencies.

Social Validity

An important aspect of any intervention designed for use in the community is the clients' satisfaction (Wolf, 1978). For meetings, this may be especially important. However, Briscoe et al. (1975) reported no ratings by their meeting participants and Seekins et al. (1983) reported that their ratings during baseline were too high to permit a difference after training. It appears from these studies that it is difficult to effect changes in performance during meetings that are detectable by the meeting participants.

By contrast, in Experiment 2 of this study, the meeting participants rated chairperson performance more than one point higher during the maintenance conditions. Further, there was no overlap in mean ratings of individual performance across conditions --- the lowest ratings during the maintenance conditions were higher than the highest ratings during the withdrawal condition. The participants in this study were able to detect differences in chairperson performance, perhaps due to the clarity of the chairperson's role and the fact that some of the members doing the ratings had served in the chairperson role at one time.

The difference in ratings across conditions was greater during Experiment 2 than during Experiment 1. This is probably due in part to the greater measured differences in chairperson performance during Experiment 2. It could also be that the meeting participants were more willing to give chairpersons credit (i.e., rate their performance higher) when they appeared to be performing more on their own than when they were being coached conspicuously by the Experimenter. But the greater experience of the members with meetings and their increased understanding of the chairperson's role during Experiment 2 cannot be eliminated as contributing to the larger rating differences. In fact, it may be that teaching clients why procedures are designed as they are is a necessary condition for acquiring meaningful social validity.

Coaching

Peterson, Homer, and Wonderlich (1982) discussed the importance of collecting and reporting data on implementation of the independent variable. In this study we reported data on the behavior of the experimenter. The data suggest that the experimenter followed the procedures reported with few exceptions. The exceptions were permitted to sustain the "good will" of the members of the cooperative, a necessary concern for the completion of this and future research projects in this setting.

It is interesting that the members increased the amount of coaching they did when the experimenter stopped coaching in Experiment 1 and again when the maintenance package was withdrawn

during Experiment 2 even though no announcements regarding changes in experimental conditions were made. During Experiment 1 the members could simply have been compensating for the absence of coaching by the experimenter irrespective of chairperson performance. But because the experimenter coached little to none during all conditions of Experiment 2, the abrupt increase in coaching by others when the maintenance package was withdrawn, again suggests that the differences in chairperson performance were detectable to members of the cooperative and important enough to more than double the number of times they assisted chairpersons each meeting.

Experimental Procedures

During Experiment 1, new chairpersons served in the order that they volunteered. This was standard practice in the cooperative at the start of Experiment 1. It was continued to avoid changing the cooperative procedures too dramatically to accomodate the experiment. This lack of random assignment casts some doubt on the observed differences in chairperson performance during Experiment 1. Perhaps the most qualified trainees volunteered only for the coaching conditions. Although a completely satisfactory response to this criticism cannot be provided, there is evidence to suggest that subject selection does not account for the performance differences.

First, the mean number of months each volunteer lived in the cooperative prior to serving as meeting chair was briefer during the

coaching conditions (8 months) than during the withdrawal condition (16 months). If experience with cooperative meetings can be expected to improve chairperson performance, then selection may well have worked against the observed effect. In addition, one trainee whose performance is represented by the third and fourth data points in Figure 2, "straddled" the change in experimental conditions. His performance was substantially poorer during the withdrawal condition (92% versus 82%). Finally, the systematic replication of the performance results in Experiment 2, when the assignment of subjects to experimental conditions was randomized, suggests that selection cannot account for the changes in chairperson performance in Experiment 1.

Another non-standard aspect of the experimental procedures is that the subjects served sequentially and therefore did not experience every experimental condition as meeting chairpersons. Technically, this violates the criteria for use of single-case analysis (Hersen & Barlow, 1976). However, there is a sense in which the entire group can be considered "the organism under study" because the study focused on the effectiveness with which they all managed meetings. Also, the consistency of performance within experimental conditions and the complete absence of overlap in performance across conditions suggest that the independent variables affected all chairpersons in basically the same direction and to the same degree. Although the formal requirements of the withdrawal design have been violated, the intent appears satisfied.

The observers in these experiments were not "blind" to the experimental conditions and therefore could have biased their observations systematically across conditions. However, the behaviors observed in these experiments were objective, the observers were well-trained, the observers were not given feedback on the "desirability" of the behavior change they recorded, and interobserver reliability was well above chance. Kazdin (1977), in a review of observation studies, concluded that observer bias does not appear to occur under such conditions.

The absence of an initial baseline in this study precludes comparing performance after intervention with an initial "base-rate" of chairperson performance. The procedures evaluated in this study were developed "in-house" over a period of almost five years. When the first experiment was conceived the operating conditions in the cooperative were nearly identical with the conditions of the first "B" condition. In on-going programs or programs under development, experiments may often have to begin with the intervention in place.

The experimenter chose a package intervention to train meeting chairpersons based on the results of prior research and based on his experience with the setting and problem chosen for study. The results of this study do not indicate which components of the maintenance package were essential; a component analysis would be required to answer that question. But the results do indicate that the package solved the problem addressed.

Follow-up

Follow-up observations were conducted during the final three meetings of the following spring semester (one year later) under conditions similar to the maintenance conditions in Experiment 2 -- members were using the maintenance package and no coaching by the experimenter. These observations revealed chairperson performance and meeting efficiency scores comparable to those achieved during the maintenance conditions in Experiment 2 (94% & 10.9 minutes per proposal). The results are especially impressive considering that two different members had served as meeting coordinator, the in-house trainer and supervisor for meeting chairpersons, during the period following the completion of Experiment 2. The maintenance package appears to be "robust" enough (Fawcett, Mathews, & Fletcher, 1980) to retain its effectiveness over time, with different local staff, and even with a different cooperative membership.

Reactivity

Other researchers have reported that having conspicuous observers in the researh setting alters the effectiveness of their interventions (see e.g., Halle, Baer, & Spradlin, 1981). It could be argued that the effectiveness of the maintenance package was dependent on the observer's presence in this study. However, the observer had been present in the setting for more than a year prior to this experiment and had other reasons for attending the meetings. Further, an informal survey following the experiment revealed that many members had forgotten that he was observing chairperson

performance. In addition, conspicuous observation by the in-house meeting coordinator was part of the maintenance package. Observer reactivity was probably not an important factor in producing the effects achieved by the maintenance package.

A more important reactivity consideration is the continued presence of the experimenter through all experimental conditions. Although the experimenter did not actively participate in guiding meetings, his presence could easily have exerted some control over the members' behavior. The experimenter was both a member of and manager for the cooperative. Many of his duties in these roles had to be performed during the meetings so he had to continue attending. This is probably not unlike the situation of other researchers who manage experimental settings but it clearly does limit the conclusions that can be drawn from this study. The experimenter cannot conclude that the procedures evaluated in this study would continue to operate effectively if he completely left the cooperative. But reducing the role of the experimenter from active coach to passive participant is an important step in this direction. It certainly makes the group less dependent on the immediate involvement of the experimenter and it frees the experimenter of the responsibility of actively directing meeting chairpersons.

Durability

The results of Experiment 1 are predicted in the reports of earlier researchers. Wolf, Braukmann, and Kirigin Ramp (1983) identified a number of once successful programs that ultimately

failed when the experimenters left the settings (e.g., Ayllon & Michael, 1959; Ayllon & Azrin, 1968). In addition, Bassett and Blanchard (1977) reported the near failure of a prison token economy they had designed when Bassett took a leave of absence. Other researchers have reported similar losses in program effectiveness as the developers reduced their direct and intensive involvement (Bushell, 1978; Couch, Miller, & Welsh, 1982; Fairweather, Sanders, Chissler, & Maynard, 1969; Scheirer, 1981).

As one very clear example of the problem, Rollins and his colleagues (Rollins, McCandless, Thompson, & Brasell, 1974; Thompson, Brassell, Persons, Tucker, & Rollins, 1974) taught elementary school teachers to use tokens and contingent attention to eliminate disruptive behavior in the classroom. Although the intervention was successful initially, when the experimenters returned for follow-up one year later they found that the teachers had abandoned the new procedures and disruptiveness had returned to baseline levels (Rollins, Persons, & Thompson, 1974). The study reported here adds support to these others that suggest the importance of analyzing the researchers' role in maintaining the effectiveness of the interventions they design. It also provides a model that can be used by other researchers to evaluate their roles in maintaining the effectiveness of the interventions they design.

Baer (1981) recommends that behavior analysts limit their interventions to those behavior changes that are likely to come

under the control of "natural" contingencies of reinforcement in the clients' environment. He points out that failing to follow this rule commits the behavior analyst to support the new behavior indefinitely. The author of the present study attempted to follow this rule in designing procedures for cooperative meetings. But as the results of Experiment 1 show, the "natural" contingencies during meetings were not sufficient to maintain a high level of chairperson performance when the Experimenter was not coaching. Although the maintenance package effectively replaced coaching by the Experimenter, one could conclude that the original goal of developing "natural" meeting procedures was not accomplished. But at least two other conclusions are possible.

First, although the meeting procedures did not come entirely under the control of natural contingencies in the cooperative meetings, the procedures are well liked by the members, the members have a reasonable degree of autonomy in managing the procedures, and the experimenter's direct involvement is not required to keep them effective. At least we have a set of "contrived" procedures that can be used to immediate benefit while we're working to develop more natural procedures.

A broader perspective on the design of behavioral contingencies suggests another possible conclusion. Many of the contingencies that we now feel are "natural" were once contrived, though usually not by professional behavior analysts. For example, exchanging money for services is a contingent relationship that most of us

accept as natural even though early cultures must have viewed it as contrived. Time and experience has made exchanging of money for services a natural contingency in modern cultures.

Training manuals, prompting checklists, and performance reviews like those used in Experiment 2, although all relatively new cultural interventions, are quite common aids to performance in settings where performance really matters (e.g., business and industry). Some may even say they have become part of the natural system of contingencies in those settings. It may be that over time, the maintenance procedures tested in Experiment 2 will come to feel as "natural" to the members of the student cooperative as similar procedures are in business and industry. The maintenance procedures "contrived" by the Experimenter, may with time, become "natural" for the members of the cooperative. If that means that members then provided the support needed to insure those procedures are used, they will in fact have become natural for this setting.

The maintenance package validated in Experiment 2 provides a model that others may use to develop their own maintenance components when they find that the effectiveness of their interventions is dependent on some behavior the researcher is unlikely to continue to engage in after the experiment is completed. Call it a temporary, immediate solution; it is at least that. Perhaps it will become the natural solution of choice with time.

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Appendix A

Description of Meeting Procedures

From the Sunflower Cooperative Handbook

CHAPTER 9.

MEMBERSHIP MEETINGS

PART I: STRUCTURE

1) PURPOSE. The Cooperative membership holds two meetings every Monday evening during the semester. The purpose of the weekly meetings is to solve problems and make decisions regarding issues that affect the membership. Although we do not follow traditional rules of order, we do have set procedures for our weekly meetings to help us solve problems and make decisions effectively. The meeting procedures are outlined below.

2) BASIC STRUCTURE. We divide the weekly meetings into two parts to maintain a clear distinction between the two different functions we must perform, problem solving and decision making. Our problem solving meeting takes place before dinner from 5:30 to 6:30. The business meeting starts at 7:00 and ends about 8:00. All members of the Cooperative should plan to attend both meetings every week. Members earn 5 credits for each meeting attended.

3) PROBLEM SOLVING MEETINGS. The Problem Solving meeting has four purposes: (1) To identify problems of interest to the membership, (2) to clarify and define those problems, (3) to develop practical solutions, and (4) to document the problems and their solutions.

a) IDENTIFYING PROBLEMS. The first task of the Problem Solving meeting is to identify problems of interest to the membership. Some problems may already be listed on the agenda as "carry overs" from a previous meeting or they may have been entered on the agenda by members some time within the last week. The meeting chairperson reads each of the problems listed at the start of the meeting and asks for clarification. The Education Coordinator reads a summary of the Feedback members have provided since the previous meeting. The chair also asks members to recommend other problems for consideration. Discussion of each problem is kept to a minimum because the purpose of this part of the meeting is only to identify and begin clarifying problems of interest.

b) ASSIGNING COMMITTEES. Once the group has identified a set of specific problems and agreed on a general definition of each, the meeting chairperson asks for a volunteer to chair each committee. Problems for which there is no volunteer chairperson are tabled. The meeting chairperson then asks for at least 2 members to serve on the committee. If at least two members do not volunteer, the problem is tabled. The committee chairs announce the meeting place for their committees before the group disperses into committees. Each committee works on only one problem at a time. If they finish work on their first problem they may choose another from the list of those tabled.

c) SOLVING PROBLEMS. Each committee has four tasks to complete in the 45 minutes allotted for problem solving. First, the committee decides whether their problem has been defined adequately, and if not, does so. Second, the committee discusses alternative solutions to the problem with the aim of finding one solution which is most "cost-effective" for the membership. Third, the committee documents the definition and solution for their problem on a proposal form which is saved for use by future members. Finally, the committee develops a recommendation to the membership regarding their problem and solution.
The committee may recommend:

1) The problem be ignored because it is not important enough to warrant change.
2) The committee's solution be implemented immediately.
3) The committee's solution be implemented at some later time.
4) The proposal be tabled for further work at another meeting.

Before the committee finishes, the members should agree on who will present the problem, solution, and recommendation to the membership at the Business meeting, what the recommendation will be, and what the rationale is for the recomendation.

4) DINNER. Dinner is served between 6:30 and 7:00 on Mondays. Monday cooks must be especially careful to have dinner ready on time because an early or late dinner will affect one of the two meetings and probably result in the meetings lasting longer than planned.

5) BUSINESS MEETING. The weekly Business meeting serves four important functions. First, it provides all members with a fair opportunity to sign for worksharing jobs they will do in the next week. Second, the meeting provides a forum for members to make announcements which concern the membership. Third, it gives the coordinators and the other members an opportunity to report on issues that concern the membership as a whole. Finally, it provides the opportunity for hearing, commenting on, and deciding on proposals.

a) JOB SIGN UP. The first item of business is to begin circulating the job sign-up sheets. The meeting chairperson asks the Program Coordinators to present their plans for the week and then asks for the membership's approval. Then the Credit Recorder divides the sign-up sheets into sets and starts them at various places in the group. These sets circulate in a clockwise direction (pass to your left). You may sign for only one job each time a set of lists passes you. Please keep the lists moving so members may sign for lots of jobs.

b) ANNOUNCEMENTS. The chairperson next asks for announcements, first from members who have made an entry on the agenda. If

more time is available for announcements, the chair asks for others.

c) REPORTS. The chairperson next asks for reports from coordinators and members in the order listed on the agenda. If more time is available for reports, the chair requests other reports.

d) PROPOSALS. Before hearing proposals, the chair makes a list of those to be discussed. If there are more than five proposals, the chair requests volunteers to table their proposals until next week. Each proposal is allowed 7 minutes for discussion and a vote.

The meeting chair calls for a presentation of each proposal in the order listed on the agenda. The person making the proposal must be concise to allow time for comments and suggestions from other members. When the scribe calls time to vote the presenter makes a recommendation to the group. The recommendation may be slightly different from the original:

1) Implement the solution as originally stated.
2) Implement the solution with (these) amendments.
3) Delay any action until further work can be done.
   at a future meeting.

If the first recommendation is <u>not</u> approved by the membership and more voting time remains, the "proposer" may make another

recommendation. If time runs out before a recommendation is approved, the proposal is tabled until the end of the meeting.

E) EXTENDING THE MEETING. After each proposal has been considered once, the meeting chairperson asks if anyone wishes to have their tabled proposal reconsidered. If there are proposals to reconsider, the chairperson will conduct a vote to extend the meeting for each. Those that pass get 7 more minutes; those that fail are tabled for another meeting. The chairperson adjourns the meeting when there are no proposals remaining for which members are willing to extend.

6) AFTER THE MEETING. When the meeting ends, proposals and reports are given to the Meeting Scribe and the sign-up sheets given to the Credit Recorder. The Credit Recorder posts the sign up sheets and next week's agenda on the bulletin board. The Scribe posts the minutes of the meeting and the Education Coordinator posts the feedback results. Proposals, past minutes, and agendas are stored in the Meeting Record, a notebook which is kept on the file cabinet in the lounge.

PART II: RULES AND PROCEDURES

(1) MEETINGS. The Sunflower Cooperative holds weekly meetings of the entire membership every Monday evening from the first week of classes until the last week of exams each semester.

(2) SPECIAL MEETINGS. Special meetings may be called as necessary to discuss important issues not resolved at the regular meetings. All special meetings must be approved at a regular meeting. Votes at special meetings are restricted to issues initially discussed at a regular meeting.

(3) QUORUM. Seventy-five percent of the Sunflower Cooperative membership must be present before a vote can be taken on a proposal at any meeting, regular or special.

(4) ATTENDANCE. Members who attend the Problem Solving or Business meeting receive 5 credits for each meeting they attend. To earn credits for attending the Problem Solving meeting, you may miss no more than 15 minutes. To earn credits for attending the Business Meeting, you must be present for the entire meeting or 90 minutes, which ever is shorter. Sign the Meeting Sign-up sheet by 10:00pm Monday to receive credits for attending meetings.

(5) CHAIR. The job of chairperson is complex and requires training. Every two weeks a new chairperson is trained to serve a two-week term. Members who have served as Meeting Chair during one semester may not serve as chair again during the semester until all other members have been offered an opportunity to serve.

(6) SCRIBE. The meeting scribe is a "non-coordinator" position equivalent to Shop Manager or Mailperson. A new Scribe is trained each semester and serves a one-semester term.

(7) APPROVING CHANGES. All changes in the Cooperative programs or procedures must be approved at one of the weekly Business meetings.

(8) HANDBOOK CHANGES. Any change to the rules and procedures stated in the Sunflower Cooperative Handbook must be approved by SEVENTY-FIVE PERCENT of the members present and voting at a meeting, regular or special. Exception: Changing the rule that requires all members to participate in the food program requires approval of ALL house members.

(9) CHANGES IN THE RENTAL AGREEMENT. Changes in the Rental Agreement (contract) during the semester require approval of ALL house members. and a 75% vote of the U.K.S.H.A. board of directors. Changes between semesters require approval of 75% of the U.K.S.H.A. board of directors.

10) MEMBERSHIP APPLICATIONS. Applications for membership in the Sunflower Cooperative must be approved by 75% of the members present and voting at a meeting.

11) OTHER PROPOSALS. All other proposals require the approval of 51% of the members present and voting.

12) ROUND THE TABLE. Any member may request a "round the table" discussion and a round the table is then mandatory. The discussion will start with the person immediately to the left of the chairperson and procedes in a clockwise direction around the group until all members have had an opportunity to comment on the issue.

13) SECRET BALLOT. Any member may request that a ballot be secret, and a secret ballot is then mandatory.

Appendix B

Designing Durable Interventions:

A Brief Discussion

> We have shown that our demonstration programs can work, now we must demonstrate that they can survive.
>
> Malott, 1974

The field of Applied Behavior Analysis is concerned with the design of technological solutions to important social problems (Baer, Wolf, & Risley, 1968; Wolf, 1978). The field has been enormously successful at demonstrating the ability to change socially important behavior as evidenced by the hundreds of experimental demonstrations reported in the journals of the field (see e.g., Journal of Applied Behavior Analysis, 1968 - 1984). But for most behavior changes to be of practical importance, they must be durable over time (Atthowe, 1976; Azrin, 1977; Baer, Wolf , & Risley, 1968; Kazdin, 1982; Kirigin, Braukmann, Atwater, & Wolf, 1982). Sometimes this means that the behavioral intervention itself must endure (Atthowe, 1973; Baer, 1981; Kazdin, 1980; Ramp, Jackson, Green, Weis, & Bushell, 1976; Stolz, 1984). This paper discusses the design of durable behavioral interventions.

A number of researchers suggest that it is all too common for behavioral interventions to lose their effectiveness and even disappear when the designers remove their direct involvement (Atthowe, 1973; Hall & Baker, 1973; Malott, 1974). Wolf, Braukmann, and Kirigin-Ramp (1983) identify a number of once successful programs that ultimately failed (e.g., Ayllon & Michael, 1959; Ayllon & Azrin, 1968). "We were often able to have some impact on

important problem behaviors but . . . the programs themselves usually did not survive. As soon as we would pull back, the use of the procedures would substantially decrease or disappear" (Wolf et al., 1983).

The work of Rollins, Thompson, and their collegues provides a clear example of the problem. They taught elementary teachers in an inner-city school district to use contingent attention and tokens to reduce disruptive behavior and increase student time on-task (Rollins, McCandless, Thompson, & Brassell, 1974; Thompson, Brassell, Persons, Tucker, & Rollins, 1974). Appropriate use of tokens and contingent attention and student time on-task increased while disruptive behavior decreased. In addition, achievement test scores were significantly higher in the experimental classrooms than in comparison classrooms. By all measures, the intervention was an impressive success.

However, when the researchers returned a year later for follow-up observations, they found that the teachers had abandoned the new procedures and student disruptiveness and time on-task had returned to baseline levels (Rollins, Persons, & Thompson, 1974). This once successful intervention disappeared soon after the departure of the program designers. Other researchers have reported similar loses in program effectiveness as the developers reduced their direct and intensive involvement (Bassett & Blanchard, 1977; Bushell, 1978; Couch, Miller, & Welsh, 1982; Fairweather, Sanders, Chissler, & Maynard, 1969; Scheirer, 1981). For this reason, it is important to analyze the researchers' role in the interventions they design.

Achieving Lasting Behavior Change

When charged with changing the behavior of individual clients, behavior analysts often attempt to teach a new skill that will be trapped by the "natural" contingencies in the client's social environment (Ayllon & Azrin, 1968; Baer, 1981; Baer, Rowbury, & Goetz, 1976; Baer & Wolf, 1970). If the client's natural environment contains elements that will support the desired behavior change, then the behavior analysts have completed their mission, at least for "this" client. If, on the other hand, the natural contingencies are not sufficient to maintain the desired behavior, special contingencies must be arranged (Atthowe, 1973; Baer, 1981; Kazdin, 1982; Skinner, 1971, 1982; Stokes & Baer, 1977).

To arrange special contingencies for a client's behavior behavior analysts often engage the behavior of other members of the client's social environment --- members who have, or can have, some control over the reinforcers and punishers for the client's behavior (Atthowe, 1973; Kazdin, 1980; Paterson, 1976; Tharp & Wetzel, 1969). Parents, teachers, ward attendents, and prison guards often serve in this capacity. When doing so, they can be considered the staff of the behavioral intervention (Kazdin, 1976). Changing the behavior of the staff may require a behavior modification program of its own (Kazdin, 1980).

The same principles that apply to changing the behavior of clients have been found useful in changing staff behavior (Kazdin, 1977; McInnis, 1976). If the natural contingencies are sufficient

to control the behavior required of the staff, again the mission is complete. Examples appear in the research literature to suggest that this can occur (Cossairt, Hall, & Hopkins, 1973; Herbert & Baer, 1972; Parsonson, Baer, & Baer, 1974; VanHouten & Sullivan, 1975). However, changes in staff behavior can fail to come under the control of the natural contingencies (e.g., Atthowe, 1973; Christophersen, Arnold, Hill, & Quillitch, 1972; Cooper, Thomson, & Baer, 1970; Katz, Johnson, & Gelfand, 1972; Panyan, Boozer, & Morris, 1970; Quillitch, 1975; Pomerleau, Bobrave, & Smith, 1974; Watson, 1976). Then special contingencies must be arranged for staff behavior as well (Atthowe, 1973; Kazdin, 1976, 1977, 1980).

If a supervisor adminsters the special contingencies for the staff, the supervisor's behavior may have to be changed as well. The supervisor's behavior can come under the control of natural contingenciess or more special contingencies may have to be arranged. Note that we have identified a hierarchy of dependency in which the behavior of the supervisor ultimately controls the effectiveness of the intervention with the client.

The behavior analyst enters the analysis at some level, often the supervisory level (e.g., Breyer & Allen, 1975; Hall, Panyan, Rabon, & Broden, 1968; Tharp & Wetzel, 1969). There are professional contingencies that probably make it "natually" reinforcing for behavior analysts to engage in behavior that promotes the effectiveness of their interventions, at least during the experiments they run to evaluate those interventions (Fawcett

et al., 1981). However, the contingencies often change when the experiment ends. If the researchers' behavior is not analyzed during the experiment, and if the support originally provided by the researchers is not replaced with some other, local source of support, then the viability of the intervention is threatened as discussed above.

Designing Durable Interventions

Fawcett and his collegues suggest that behavioral interventions will be more effective and last longer if they are contextually appropriate, that is if they are effective, inexpensive, decentralized, flexible, simple, compatible and sustainable (Fawcett, Mathews, & Fletcher, 1980; Fawcett, Seekins, & Braukmann, 1981; Seekins & Fawcett, 1984). This is certainly sound advice.

Specific approaches to the design of durable interventions also appear in the literature. One approach is to "package" interventions (e.g., Embry, 1984; Fawcett & Fletcher, 1977; Mathews & Fawcett, 1979). By standardizing and packaging an intervention the effort required from the designers and the skill required of the users may be reduced (Paine, Bellamy, & Wilcox, 1984).

A second approach is to program more levels of a management hierarchy seeking a level at which behavior will meet a natural community of reinforcement or a level at which the behavior required of the developers to support the intervention is sufficiently low to make it reinforcing for them to continue their involvement. For example, Rollins and Thompson (1978) returned to the school district

in which they had trained teachers to use contingent praise and tokens to reduce disruptiveness. During a four and one-half day workshop, they taught four principals how to teach teachers the new classroom procedures, how to observe teacher performance, and how to deliver performance feedback. They visited each school during teacher training and once each month to consult with the principals regarding the procedures. The results of this intervention paralleled their previous work (Rollins et al., 1974; Thompson et al., 1974) with the encouraging exception that the use of the procedures by the teachers and the effects on student behavior were maintained at four-month and one-year follow-up observations. Apparently, the principals were reinforced sufficiently by the teachers use of the procedures so that very little direct involvement from the experimenters was required.

Another approach may be to teach staff members to recruit natural communities of reinforcement. Researchers have had some success with this approach at the client level (e.g., Graubard, Rosenberg, & Miller, 1974; Seymour & Stokes, 1976; Stokes, Fowler, & Baer, 1978). There is no obvious reason why it should not work at the staff level.

There are certainly other approaches that could be tried. The ability to make behavioral interventions durable is just emerging as a technology and is likely to require extensive research and development. It is not clear at this point what strategies will be most useful in the design of durable interventions. However, it

seems almost certain that if we are to learn how to design durable interventions, we will need a systematic means of evaluating durability.

Evaluating Durability

The practice of reporting follow-up data has been common in the field for some time. Follow-up is commonly used to evaluate the degree to which the effects of interventions are maintained by natural contingencies (see e.g. Kale, Kaye, Whelan, & Hopkins, 1968). Follow-up conditions are generally defined as whatever is natural in the client's environment. But, follow-up also can be used to get some indication of the durability of interventions (see e.g., Kunz, Lutzker, Cuvo, Eddleman, Lutzker, Megson, & Gulley, 1982). The conditions for follow-up on engineered interventions must be specified more carefully if researchers are to learn to design more durable interventions.

To make intervention follow-up data more instructive, the conditions under which the data are gathered should be similar to the conditions under which the intervention is expected to operate after the experiment is completed (Fawcett et al., 1981; Paine & Bellemy, 1982; Paine, Bellemy, & Wilcox, 1984). For example, the local staff should be given responsibility for implementing the intervention during follow-up if they will be assuming that responsibility after the experiment is completed (Paine et al., 1984; Rollins & Thompson, 1978). If observers must be present during follow-up, then their presence should be as unobtrusive as

possible. Alternatively, researchers could design observations into the intervention itself (e.g., Iwata, Wong, Riordan, Dorsey, & Lau, 1982). Finally, the experimenters should not be present on a routine or continuous basis unless they will also be continuously available after the experiment is completed.

Granted, compromises will have to be made. It may not be possible to give the local staff full responsiblity of an entirely new intervention, at least at first. It also may not be possible to eliminate the experimenter entirely from a demonstration program without seriously threatening the program's viability. However, if the follow-up conditions are described completely, complete adoption of the ideal conditions is probably not necessary for readers to learn from follow-up.

A complete follow-up report should include: measures of the important dependent variable(s), measures of the independent variable(s) including data on the relevant behavior of the local staff, and measures of the behavior of the experimenter(s) as it relates to maintaining the integrity of the intervention. Peterson, Homer, and Wonderlinch (1982) discuss the need for careful observation of the independent variable in addition to the dependent variable during the formal experimental conditions. Their recommendations may be even more important for the collection of instructive follow-up data.

In addition to controlling follow-up conditions more carefully and reporting the results more systematically, researchers should

discuss the reasons for the success or failure of their procedures during the follow-up condition. Thoughtful discussions of interventions that fail during follow-up may be especially useful to readers at this early stage of developing a technology for the design of durable interventions.

The recent work of Iwata and his collegues provides a concrete example of a move toward the design of durable interventions and the careful use of follow-up to study it. Iwata, Wong, Riordan, Dorsey, and Lau (1982) used written instructions, quizzes, role-playing and feedback to train therapists at the John F. Kennedy Institute to conduct assessment interviews with outpatient clients. After demonstrating the effectiveness of the training procedure, they implemented a system of peer observation "to increase the likelihood that short-term changes in therapist behavior would endure over time." Seven follow-up observations conducted 4 months following training showed near-perfect maintenance of the skills trained.

Behavioral interventions normally must produce both reliable and durable effects to make an important contribution to solving social problems. When existing environmental contingencies are not sufficient to support desired behavior, behavior analysts must engineer new contingencies. When this is true, the intervention itself must endure to produce lasting effects. Researchers in the field have been successful at designing effective interventions but all too often the interventions they design don't last. Approaches to designing durable interventions appear in the research literature

but more research and development is needed. Collecting comprehensive follow-up data under conditions similar to those in which the intervention will be expected to operate after the experiment is completed should help researchers learn what types of interventions are durable. It may also help us learn how to make our own interventions last.

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