

THE UNIVERSITY OF MANITOBA

POST-TRAINING CONTINGENCIES:
A SELF-RECORDING SYSTEM TO
DEVELOP QUANTITY AND QUALITY
OF CONTINGENT ATTENTION IN
INSTITUTIONAL SUMMER STAFF

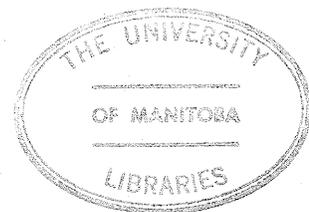
by

Lucia C. de Albuquerque

A Thesis

Submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements for the Degree
of Master of Arts

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ABSTRACT

The use of a system involving feedback and self-recording to develop quantity and quality of generalized contingent attention was evaluated. Five high-school students hired by an institution for retardates to function as aides during the summer served as subjects. Quality of attention was defined as the percentage of appropriate resident behavior followed by positive staff attention and, under certain circumstances, inappropriate resident behavior followed by negative attention. Quantity of attention was measured as the percentage of either positive or negative attention obtained from the total number of observational intervals per session. Initially, a short baseline of the subjects supervising the retarded residents in a dayhall setting was obtained. The subjects then received a brief workshop designed to teach them to discriminate among the different combinations of resident behavior and staff attention. In addition, in a multiple-baseline-across-subjects design, the staff were taught to self-record the quantity and quality of their attention. After self-recording training, quantity of appropriate staff attention increased for all subjects, while quality of staff attention showed an increasing trend throughout the study. Follow-up data showed the results to be maintained for all but one subject. The results suggest that the self-recording system is a useful set of post-training contingencies to increase and maintain desirable behavior by staff.

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INTRODUCTION

With the increase of behavior modification applications reflecting a concern with intervention in the natural environment (Tharp and Wetzel, 1969), paraprofessionalism, as a research area, has received a considerable amount of attention. Nevertheless, working in the natural environment means, from a researcher's point of view, having to cope with several methodological problems, as pointed out by several reviewers of this area (O'Dell, 1974; Mazza and Pumroy, 1975; Cox, 1975; Loeber and Weisman, 1975).

In addition to the methodological problems pointed out by the above reviewers (e.g., lack of adequate control and measurement procedures, lack of adequate description of training techniques) there have also been suggestions for a more careful need for programming generalization and maintenance of post-training performance in behavioral applications (Baer, Wolf, and Risley, 1968; Wahler, 1969; Keeler et al., 1976) and especially when working with paraprofessionals (Athowe, 1973; Kazdin, 1973; Loeber and Weisman, 1975). Athowe (1973) criticized the behavioral sciences for looking only at treatment and not taking the next step in controlling the maintaining milieu. He stated that we, as behavioral scientists, are building a technology of behavioral change, but we lack a technology of behavioral persistence when dealing with paraprofessionals.

Too often programs yield positive results but when the program directors leave, the program disappears. Kazdin (1973) similarly stated that staff become increasingly lax in their use of new skills unless consequating events are introduced for post-training performance. Moreover, Loeber and Weisman (1975) stated that resistance to extinction and generalization of staff responding subsequent to training is largely a function of the presence or absence of discriminative stimuli and reinforcing consequences for trainer responding. Little research has focused on the implementation of post-training contingencies in order to maintain desirable trainee behaviors, and, at the present time, this remains one of the most important, and perhaps one of the most neglected areas in behavior modification programs.

Related to the concern for behavioral persistence following training, Stein (1975) questioned the validity of brief training sessions that characterize the "trend" of training some paraprofessionals. Stein showed concern for the misapplication of behavioral principles due to the relatively brief presentations that appear to characterize many paraprofessional seminars.

Nevertheless, fast but effective "training packages" are urgently needed, especially when the trainees constitute a transient population (e.g., students working in an institution) requiring, for practical reasons, a different approach than permanent staff members, teachers or parents. Leonhart and Albuquerque (1976) assessed the

effects of a one-hour training procedure for undergraduate students using positive reinforcement and extinction during sessions with retarded children. All subjects scored high during training but little generalization to different sessions and/or different children was observed after training. The authors concluded, in accordance with Stein (1975), that newly acquired behavior modification skills may not easily generalize beyond the training session (workshop, seminar, in-service, etc.). In Leonhart and Albuquerque's study, the subjects were undergraduate students enrolled in an operant course at the university and all of them had already had some experience in conducting sessions with retarded children. One may assume that if a population of "naive" students in behavior modification is the target of training, post-training generalization might be even harder to accomplish.

In view of the above facts, the behavioral scientist appears to face the paradoxical situation of requiring fast training of paraprofessionals who will show long-lasting and generalized effects. One of the alternatives to solve such problems is post-training supervision and feedback (Gladstone and Sherman, 1975; Parsonson, Baer, and Baer, 1970; Bricker, Morgan, and Grabowski, 1972; Cooper, Thomson, and Baer, 1970; Panyon, Boozer, and Morris, 1970; Pomerleau, Bobrove, and Smith, 1973). Although effective in most cases, feedback procedures present the serious disadvantage of being uneconomical in the sense of involving the presence of a specialist

(Gladstone and Sherman, 1975).

An alternative to feedback is the development of more economical procedures such as teaching self-control techniques to newly trained staff (Gladstone and Sherman, 1975; Athowe, 1973; Herbert and Baer, 1972; Loeber and Weisman, 1975). Although the development of self-monitoring techniques to paraprofessionals seems very promising, research in the area has been sparse. Thomas (unpublished) demonstrated that when teachers recorded their own praise, token deliveries, and instructional probes from videotapes of their classroom activity, the frequency of those behaviors increased in subsequent class sessions. Herbert and Baer (1972) obtained successful results with two out of the three parents that were taught to use golfer's wrist counters to self-record the type of attention given to children. The results were obtained despite inaccurate parent self-recording and changes were maintained for at least five months after the study ended.

Considering the above, the present study examined a set of post-training contingencies to maintain desirable staff performance. More specifically, this study attempted to assess the effectiveness of a self-recording system as a means of obtaining and/or maintaining desirable levels in terms of both quantity and quality, of appropriate applications of generalized contingent attention by institutional summer relief staff (i.e., a transient population) to the desirable behavior of the residents of the institution.

METHOD

Subjects

Three male and three female high-school students, hired by the Manitoba School for Retardates to function as aides as part of the institution summer relief program, served as subjects. The subjects' ages were between 16 yr and 18 yr (mean 17 yr); two of the subjects had just completed grade 10, three had completed grade 11, and one subject had just finished grade 12. Subject-selection was made on the basis of no prior formal training in behavior modification, and, no prior work experience with retarded residents. One of the subjects (male, age 17, finished grade 11) was arbitrarily selected to function as a pilot subject.

Setting and Residents

In order to minimize subject interaction, this study took place on five different wards of the Manitoba School. The pilot subject was assigned to work at Spruce Cottage, Subject A was assigned to Ward 3 in Eastgrove, Subject B and C to Cedar Cottage, Subject D to Ward 2 in Eastgrove and Subject E worked at Grandview. Both Eastgrove and Grandview are wards for male adult residents (number of residents present in the dayhall requiring supervision by staff varying from 12 to 15), Cedar Cottage is for teenage girls, and Spruce Cottage for young boys (number of residents present in both dayhalls varying up to 30). All residents were severely or

profoundly retarded.

Observation data were gathered at the ward dayhall to which the subjects were assigned. The dayhall was the ward facility where the residents and staff spent most of their time when they were not engaged in planned activities such as training session, swimming, etc.

Typically the residents would be sitting (on chairs, on the floor) or, if allowed, walking to an adjacent play-area; and, the task of the summer aides was to "supervise" and interact with the residents in such situations.

The dayhalls had an average dimension

The dayhalls had average dimensions 10 m X 5 m

The dayhalls had average dimensions of 10 m. X 5 m., and they were each furnished in a similar manner: chairs against the walls, tables, and one T.V. set that was usually in operation.

Observation Code

Generalized contingent attention, defined as the application of correct social contingencies by staff to any behavior of the residents, was measured by means of an observation code covering two forms of resident behavior (appropriate and inappropriate) and three measures of staff attention (positive, negative, and no interaction). Appendix A includes a list of residents' appropriate and inappropriate behaviors adapted from a checklist of maladaptive

behaviors used by the Cambridge State Hospital (Cambridge, Minnesota) and from Parsonson, Baer, and Baer (1974). An instance of staff attention was scored if one or more of the following behaviors occurred:

- (a) Staff directed a verbalization to the resident. To be directed to the resident, the verbalization had to include the resident's name and/or the staff had to be looking directly at the resident.
- (b) Staff came into physical contact with the resident; i.e., a body part of the staff came into direct contact with the resident. Exceptions to this were instances of accidental contact; e.g., staff tripped over resident's foot.
- (c) Staff maintained eye contact with the resident for at least a 5-second period from a distance of no more than 5 feet.
- (d) Staff provided the resident with and/or took away from the resident any materials or objects.

If none of the above behaviors occurred (e.g., staff was watching T.V.) an instance of no attention was scored. If, on the other hand, an interaction occurred, the observer scored one

of the two types of attention:

Negative staff attention:

- (a) any verbal expressions of disapproval, frowns, headshaking, and hand gestures (such as shaking a finger), or any other verbal expressions programmed as negative reinforcers (e.g., "No");
- (b) any removal of materials or objects from the resident;
- (c) any other form of physical contact apparently intended as punishment (e.g., hand-slapping).

Positive staff attention was scored if any of the following occurred:

- (a) any form of attention (other than negative attention), including all verbal statements of approval, praise, encouragement, or affection (besides all passive or neutral expressions to the resident), and smiles, hugs, and kisses;
- (b) the supplying of materials and/or objects;
- (c) direct physical contact with the

resident, excluding accidental contact and any type of negative reinforcer involving physical contact;

- (d) eye contact with the resident for a minimum of 5 seconds from a distance of no more than 5 feet from the resident.

The above-defined forms of staff attention were recorded only if they were made to a specific resident. General comments (e.g., "Time to go, kids") were not recorded as staff attention. The focus of observations was always on the staff. An instance of observation of staff attention began with the initiation of one or more of the staff behaviors cited above and ended when:

- (a) the observation interval ended (i.e., 5 seconds had occurred);
- (b) any or all of the above behavior between a staff and a resident terminated for more than a second;
- (c) the staff attended to another resident.

An instance of attention was not scored if it was ongoing when the observation interval began. For example, the observer might have looked in time to see the staff verbalizing to the resident or looking at, or touching the resident, however, he did

not see the behavior of the resident preceding the interaction. If this occurred, the observer would disregard the first instance of attention, wait until the next instance occurred in that interval and score that instance. If the observation interval ran out and no additional instance of attention occurred, the interval and score that instance. If the observation interval terminated and no additional instance of attention occurred, the observer would place a mark in each of the four categories to stipulate that it was an ongoing interaction.

After an instance of staff attention, the observer recorded the type of attention and simultaneously recorded the resident's behavior that immediately preceded the attention as appropriate or inappropriate (unless no interaction had taken place). If the behavior of the resident was both appropriate and inappropriate at the same time, it was recorded as inappropriate.

The above observational code measured quality and quantity of attention.

Quality of generalized contingent attention was defined as the percentage of correct generalized contingent attention calculated from the total instances of attention given during an observation session. In order to facilitate the scoring of correct contingent attention, the following guidelines were set up:

Correct Staff Attention occurred when appropriate resi-

dent behavior was followed by positive staff attention (A-P);

Incorrect Staff Attention occurred when: (1) appropriate resident behavior was followed by negative staff attention (A-N); (2) inappropriate resident behavior was followed by positive staff attention (I-P).

(Note: The category inappropriate behavior of a resident followed by negative attention of staff (I-N) was judged as correct or incorrect depending upon: (a) severity of the behavior; (b) history of resident; and (c) ward rules for using negative attention.)

Quantity of attention was defined as the percentage of either positive or negative attention obtained from the total number of observational intervals per session.

Observational Procedures

A five-second - observe, five-second - record system, that is, five-second periods of observing alternated with five-second periods of recording, was employed. A tape recorded indicated the beginning of each interval through earphones worn by the observer. (See Appendix B for a copy of the recording sheet.) Observations were conducted once in the afternoon on each day that the subjects were on duty. A total of 90 intervals (15 minutes) were scored per session.

Reliability was obtained by having an independent observer

record the staff-resident interactions simultaneously with the author. A total reliability percentage was obtained by dividing the number of agreements by the total number of observation intervals and multiplying by 100. Agreement was defined as both observers recording the same category for both resident and staff behaviors for every given interval. In addition, the percentage was calculated separately for each of the five categories so as to indicate their relative contributions to the overall interobserver agreement score.

Experimental Procedure

The typical orientation given to summer relief staff at the Manitoba School involves a three-day training program divided in the following way: on the first day there is a lecture on mental retardation and tour of the school; on the second day there is a lecture on behavior modification; and, on the third day there is a lecture on first-aid.

The subjects took part in the orientation program along with the new recruited staff on days one and three. On the second day, instead of participating in the behavior modification lecture, the subjects were asked to go to one of the education classrooms of the institution and were given instruction concerning the research project and the workshop described below. (A copy of the instructions is included in Appendix C.)

Experimental Phases

Baseline. After general instructions, the experimenter led each of the subjects to their respective wards and introduced them to the head nurse or the person in charge. The subjects were then instructed to go to the ward dayhall and supervise the residents doing whatever they considered would be appropriate to the situation. One fifteen-minute baseline session was conducted with each subject in the above situation. Longer or more numerous baseline sessions were impossible for practical reasons.

Workshop. The workshop was planned to be as similar as possible to a typical short-duration inservice commonly given at institutions (e.g., a group lecture with no written exams). The training session had as instructional objectives that the subject should:

- 1) hear that behavior is a function of its consequences;
- 2) hear, verbalize, and see everyday examples of four basic principles of behavior modification: (a) positive reinforcement, (b) negative reinforcement, (c) punishment, and (d) extinction;
- 3) read a list of appropriate and inappropriate behaviors of residents;
- 4) hear various examples of how the staff can consequence behavior so as to increase appropriate resident behavior and decrease inappropriate behavior.

Taking into consideration these four objectives, the following activities were presented to the subjects:

- 1) Introduction: the experimenter gave a brief explanation of behavior modification (Objective #1) and briefly introduced the next activity.
- 2) Film: the film "Who did what to whom" (Mager, 1972) was shown. This film consisted of several short scenes introducing the above-mentioned principles in action. After the presentation of each scene, the projector was interrupted and the subjects were asked questions about the situations and the principles (Objective #2).
- 3) The subjects were asked to read (and keep for later use) the list of appropriate and inappropriate resident behaviors shown in Appendix A (Objective #3).
- 4) Lecture: finally, the experimenter gave a lecture on how to use correct contingent attention (Objective #4). The subjects were given a diagram (to read and keep) of the different combinations of resident behavior and staff attention. At the end of the lecture, subjects were allowed to ask questions.

The workshop lasted approximately two hours.

Self-Recording Training

At this phase of the study the subjects were individually trained to record the quantity and quality of their own attention and the resident behaviors that the attention was contingent upon. The experimenter contacted each subject and gave oral instructions about the self-recording of quality of attention and also gave written and oral instructions about the self-recording of quantity of attention (see Appendix D for a copy of the written instructions).

1. Supervised Self-Recording of Quality of Generalized Contingent Attention. The experimenter told the subject that he/she would learn a special exercise involving self-monitoring closely the type of attention that he/she was giving to residents in the dayhall. The experimenter then proceeded to give instructions on how to use the quality self-recording sheet. (Appendix E includes a copy of the quality self-recording sheet.) The quality self-recording system involved 10 trials (i.e., 10 instances of attention). The subjects were asked to circle the corresponding category of attention on the sheet immediately after the occurrence of an interaction. The 10 trials did not necessarily have to be with 10 different residents, but two consecutive trials could not be directed to the same resident.

After oral instructions were given, the experimenter modeled the use of the system by self-recording three instances of attention.

After this, the subject was considered ready to begin his/her first session.

As soon as the session was started, the experimenter also observed the staff-resident interactions and recorded them on another copy of the self-recording sheet. After ten instances of self-recording of attention, the subject computed his/her quality of generalized contingent attention. The final step involved the subject showing the sheet to the experimenter and computing inter-observer agreement. Inter-observer agreement for quality was computed using the same method described in the section entitled Observational Procedures (above). The experimenter then gave verbal feedback, praising the subject for his/her high agreement with the experimenter, if such had occurred, and self-recording of quantity then took place. Criterion for termination of Quality Self-Recording Training was three sessions (3 days) with the inter-observer agreement (subject-experimenter) above 70%.

2. Supervised Self-Recording of Quantity of Generalized Contingent Attention. The experimenter gave a golfer's wrist counter to each subject and instructed the subjects on how to count the instances that they gave any kind of attention to the residents in five-second intervals. The subjects were told to count to themselves: one thousand, two thousand, ... five thousand. Each subject would click his/her counter if an instance of attention had occurred during the interval. The subject would

continue until the experimenter told him/her to stop, usually after 60 intervals (approximately 5 minutes). The subject calculated his/her percent of quantity of attention and the inter-observer agreement with the experimenter was calculated by dividing the smaller coefficient of attention by the larger and multiplying by 100. The feedback component of this quantity training session involved: (a) the experimenter praising the subject's high agreement with the experimenter, if such was the case; and (b) the experimenter calling the subject's attention to the fact that his/her percent of attention was above or below the 50% criterion for quantity as explained in the written instructions (see Appendix D).

The subjects were required to have at least 3 training sessions. These sessions were conducted during the mornings in the dayhall, and did not interfere with the subjects carrying out their duties of supervising the residents. Criterion for ending Quantity Self-Recording Training was not inter-observer agreement due to the fact that Herbert and Baer (1972) assessing a similar type of self-recording with a wrist-counter, found that their subjects' observations were very inaccurate. Therefore, for this study, a criterion of 3 sessions with percent of attention above 50% according to the experimenter's data was chosen as the criterion. The criteria for ending quality and quantity self-recording were not mentioned to the subjects.

While the subjects were being trained in the morning, the

afternoon observations were kept constant with one modification: at the end of each observational session, the subjects were given feedback in terms of whether or not they reached the 50% criterion of quantity of interactions.

Feedback only. After the subjects had reached the criteria for both quality and quantity, self-recording training was terminated. The afternoon observations were maintained with feedback for quantity of attention in terms of the 50% criterion.

Follow-up. At this phase of the study, the afternoon observations were made without any feedback, as in baseline and post-workshop. In general, this phase of the study coincided with the last week of summer work and, since the subjects had different working shifts, the same amount of follow-up observations was not possible for every subject.

Experimental Design

A multiple baseline across subjects was employed in an attempt to analyze the efficiency of the self-recording system.

Subjects A, B, C, D, and E received the self-recording system after 10, 11, 12, 13, and 15 days, respectively, of the post-workshop condition. Self-recording training lasted three days for all subjects. Follow-up data was obtained once for Subjects A, B, and C, twice for Subject D and three times for Subject E.

In order to test the feasibility of the self-recording system the Pilot Subject received self-recording of quality training immed-

imately after the workshop for eight days; after that he received self-recording of quantity training for three days, feedback for four days, and follow-up for four days.

RESULTS

Reliability checks between the experimenter and an independent observer were made in 27% of the observation sessions. The mean percentage of agreements, computed from totals of all the reliability checks across conditions, was 90% (range 78 to 100%). The following mean percentages were obtained per category: 97% (Range, 73 to 100%) for appropriate resident behavior; 86% (range, 75 to 100%) for inappropriate resident behavior; 99% (range, 94 to 100%) for staff positive attention; 82% (range, 75 to 100%) for staff negative attention; 89% (range, 76 to 100%) for frequency of interaction; and 88% (range, 75 to 100%) for instances of no attention.

Figure 1 presents the mean percentages of quality (circles and triangles) and quantity (bars) of generalized attention per subject across experimental conditions. (Appendix F contains the same data for the Pilot Subject.)

 Insert Figure 1 about here

During baseline (B) Subjects A, B, C and D's quality of attention ranged from 60 to 78%. Subject E showed considerably lower quality of attention (28%). In terms of quantity, all subjects demonstrated percentages below the 50% criterion. The following

group means were obtained for baseline: 62% for quality of attention and 30% for quantity of attention.

In the Post-Workshop condition the subjects' quality of attention increased (mean ranging from 77 to 83%) with the exception of Subject B whose percentage remained approximately the same as in baseline (77%). Subjects A, B and D quantity of attention remained approximately the same in this condition (33, 17 and 30%, respectively) whereas Subject C decreased his amount of attention (27%) and Subject E increased (36%). The group mean was 79% for quality of attention (higher than baseline) and the overall mean for quantity of attention was 29% (approximately the same as baseline and below criterion).

When the self-recording system was introduced (T) quality increased for all subjects except for Subject C whose percentage remained approximately the same as the two prior conditions (75%). In this condition all subjects markedly increased quantity of attention. Group means were 89% for quality and 70% for quantity.

When the self-recording training was faded-out and only feedback took place (F.O.), quality increased for four subjects and slightly decreased over training for one subject (D). Quantity of attention decreased for Subjects A (77%), B (53%), and D (62%) and increased for Subjects C (68%) and E (89%). Group means were 93% for quality and 70% for quantity.

When the follow-up checks were done (F.U.) quality increased

for Subject A (99%), B (100%), and D (93%), and decreased for Subjects C (82%) and E (86%). In terms of quantity, there was an increase for Subjects A (91%) and B (83%), and a decrease for Subjects C (33%), D (60%), and E (72%). With the exception of Subject C whose quantity performance markedly dropped, the subjects presented quantity levels above the 50% criterion. Group means for quality of attention were 92% and for quantity 68%.

Appendix G shows the session-by-session data of both experimental and pilot subjects. This data is included here merely for purpose of showing daily variability; apart from that it is assumed that Figure 1 summarizes the results without any serious losses.

Table 1 depicts the reliability percentages obtained between experimenter and subjects when the subjects were trained to self-record their attention.

 Insert Table 1 about here

The mean percentages of quality of attention were considerably high. Subject A had the highest percentage (93%), followed by Subjects E (87%), B (80%), and D (80%). Subject C obtained the lowest mean percentage (72%). Quantity of attention reliability scores were much lower than quality (range: 48 to 74%). In general, quantity reliability scores showed improvement over time.

DISCUSSION

This study attempted to examine the effects of a self-recording system as a means of obtaining and/or maintaining both quality and quantity of generalized contingent attention of summer relief staff at an institution for the retarded.

The percentage of quantity of generalized contingent attention was markedly higher after the introduction of the self-recording system for each subject, than they were during the two previous conditions (baseline and post-workshop). Even though the subjects performance during baseline should be interpreted with caution due to the brief duration of the baseline condition, there did not seem to be any overall changes in terms of quantity of attention as a result of the workshop. The subjects presented low quantities of attention in baseline (group mean: 30%), low quantities after the workshop (group mean: 29%). The fact that quantity of attention was usually above the 50% criterion for each subject only after the self-recording system was introduced, suggests that uncontrolled variables were not responsible for this increase (group mean during self-recording training: 70%). Therefore, it is reasonable to conclude that the self-recording system was effective in producing the increase in quantity of generalized contingent attention.

In terms of quality of attention the effects of the self-

recording system are somewhat harder to sort out because of the ascending trend that the subjects exhibited throughout the first two phases: baseline group mean was 62% and the post-workshop group mean was 79%. A claim that the workshop increased the quality of the subjects' attention would be inappropriate. Because of the brevity of the baseline any changes in the post-workshop performance could be attributed not only to the workshop itself but also to other contingencies operating in the subjects' environment (i.e., instruction and feedback from the head-nurses, modelling from staff, etc.). When the self-recording training was introduced the ascending trend of quality persisted (group mean: 89%) for all subjects except Subject C. However, there is some indication that Subject C did not understand the instructions of the quality self-recording system. On the second quality self-recording session, Subject C's reliability score with the experimenter was 100% (all his attention fell in the category A-P: Appropriate Resident Behavior, Positive Staff Attention). On this subject's third training session, reliability dropped to 50%. When the experimenter discussed this drop with her, the subject reported that she thought that the system required her to record whether an interaction had a positive or negative result. For example, if she "yelled" at a resident when he was crying and the resident stopped crying, Subject C would record her attention as being positive since the immediate result

was "positive" (resident stopped crying). Therefore, Subject C received new instruction about the system and in the next condition (feedback only) she reached a mean percentage for quality of 90%.

Although the data prior to training does not allow for the conclusion that the quality self-recording system per se was responsible for the increase in the subjects' use of correct attention, the system may have helped to maintain quality at a high level while quantity increased.

When the self-recording system was faded-out and the feedback only condition took place, quantity of attention remained the same for the group (group mean: 70%) while quality increased (group mean: 93%). The results of the follow-up were encouraging: there was a slight decrease in quality (group mean: 92%) and quantity (group mean: 68%), but the percentages were significantly superior to either baseline or post-workshop. All subjects showed a quantity performance in follow-up above the 50% criterion with the exception of Subject C who showed the least persistent effects (33%). In general, the system eliminated supervision while maintaining lasting effects. Nevertheless the follow-up was brief for most subjects, occurring mainly in the last week of their summer work.

One interesting finding of this study was that when quantity of attention markedly increased, quality increased as well or was

maintained at a fairly high level. This has optimistic implications for applied work (e.g., dayhall supervision situations). For example, it is encouraging to see that Subject B was able to increase the quantity of attention from 15 to 83% of the time while her quality reached a 100% level. One could assume that the opportunities to ensure the strengthening of appropriate resident behavior and the weakening of inappropriate behavior had increased approximately by five times. Unfortunately, however, this study does not provide an answer for whether or not the increase in quantity and quality observed in the staff generated concomittant increases in the appropriate behavior of the residents. Even though common experience and the applied literature often suggest a relationship between quality and quantity of staff attention and resident improvement (Parsonson, Baer and Baer, 1974) further investigation of this relationship is needed.

It is interesting to note that the quality scores were usually much higher than the quantity score even at baseline. This raises questions such as: was quality a valid dependent variable in this study? The fact that "neutral" expressions of the subjects as well as eye-contact were scored as positive attention lead one to assume that quality percentages would have been smaller had a more stringent definition of quality been used (e.g., enthusiasm such as in Leonhart and Albuquerque, 1976). On the other hand, if one assumes that

the observation code employed is a more realistic approach for a "transient" population, the baseline levels of quality of attention found here were similar to the ones found by Parsonson, Baer and Baer (1974) working with teachers with a somewhat similar code. Furthermore as the above authors stated, such baseline levels do not contraindicate further training. Herbert and Baer (1972) reported three cases of parents with baselines in a comparable range (55% to 72%) who had very poorly behaved children. Training those parents to attend to 80% or more of appropriate behavior greatly improved the children's behavior.

In contrast with quality, quantity demonstrated very low baseline levels. A minimum criterion of 50% was assigned by the experimenter. Nevertheless this decision was arbitrary. There seem to be no findings or guidelines in the behavior modification literature that would be helpful for management situations in terms of determining an optimum level of quantity of attention. Perhaps another alternative would require behavioral engineering of the dayhall situation itself. The staff could be showing low percentages of interaction due to a poorly programmed environment (large room, many residents, chairs and a T.V. set). In this particular case, rearranging the environment (smaller spaces, less residents, furniture and activity planning) would perhaps lead to an output certainly different and most likely better than the one achieved by the quantity self-recording system.

This study throws some light on the issue of how accuracy of self-recording relates to effectiveness of the self-recording procedure in generating appropriate levels of attention. Analysis of the comparison between experimenter and subject agreement indicates that accuracy seemed to be a crucial factor for quality self-recording and corresponding changes in the dependent variable quality, but not so crucial in terms of quantity self-recording and the corresponding quantity changes. In quality self-recording Subject A obtained the highest reliability mean score (93%) and the highest quality mean percentage at the corresponding experimental condition (96%). In contrast, Subject C obtained the lowest reliability score (72%) and the lowest corresponding quality change (75%). In terms of quantity, as in Herbert and Baer (1972), no such relationship was observed (Subject B had the highest reliability score which was 74%, and her corresponding mean quantity change was 58%; Subject D had the lowest reliability score 48%, and her corresponding mean quantity change was 62%). There are two plausible facts that could account for this difference between the quality and quantity reliability results. In the first place, self-recording quality as it was programmed allowed the subject to interact, stop his/her activities, and then self-record. On the other hand, self-recording quantity demanded that the subject interact, count to himself, and self-record at the same time. It is therefore not surprising that the second approach produced less

accurate results due to the three competing responses, and as the results show, accuracy increased over time as the subjects obtained practice emitting those responses concurrently. The second and perhaps as least as important reason concerns the rationale behind each type of self-recording. The quality of self-recording, being more complex, required the subject to discriminate among the combinations of four different categories of behavior (appropriate - inappropriate, positive - negative). Therefore, one would assume that the subject had to exhibit this discrimination in order for changes to occur. The quantity self-recording, on the other hand, involved discriminating simply whether or not one interaction had occurred, therefore, an underestimation of the number of interactions that occurred did not seem to have hindered changes in the dependent variable. However, as Herbert and Baer (1972) pointed out, there could be lower limits to the accuracy of self-recording below which the procedure can be ineffective. This matter still remains open for investigation.

The experimental design of this study did not permit an analysis of the relative effectiveness of the main components of the system: self-recording and feedback. Although the training was planned to give more emphasis to the self-recording procedure itself, feedback was added to the system because a treatment package is usually more successful than a single technique. Behavior is more enduring when it is elicited by a variety of stimuli and

maintained by a variety of reinforcers (Athowe, 1973).

The system, as it was presently used is still open to the criticism that it is uneconomical (Gladstone and Sherman, 1975) in the sense that it requires supervision by a qualified specialist.

In summary, the self-recording system was effective in terms of increasing quantity of generalized contingent attention for all subjects as well as simultaneously maintaining high percentages of quality of attention. Follow-up observations, although brief, showed the results to have been maintained for four out of five subjects. The self-recording system, therefore, may be useful for increasing or maintaining desirable behavior in a "transient" staff population.

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TABLE 1

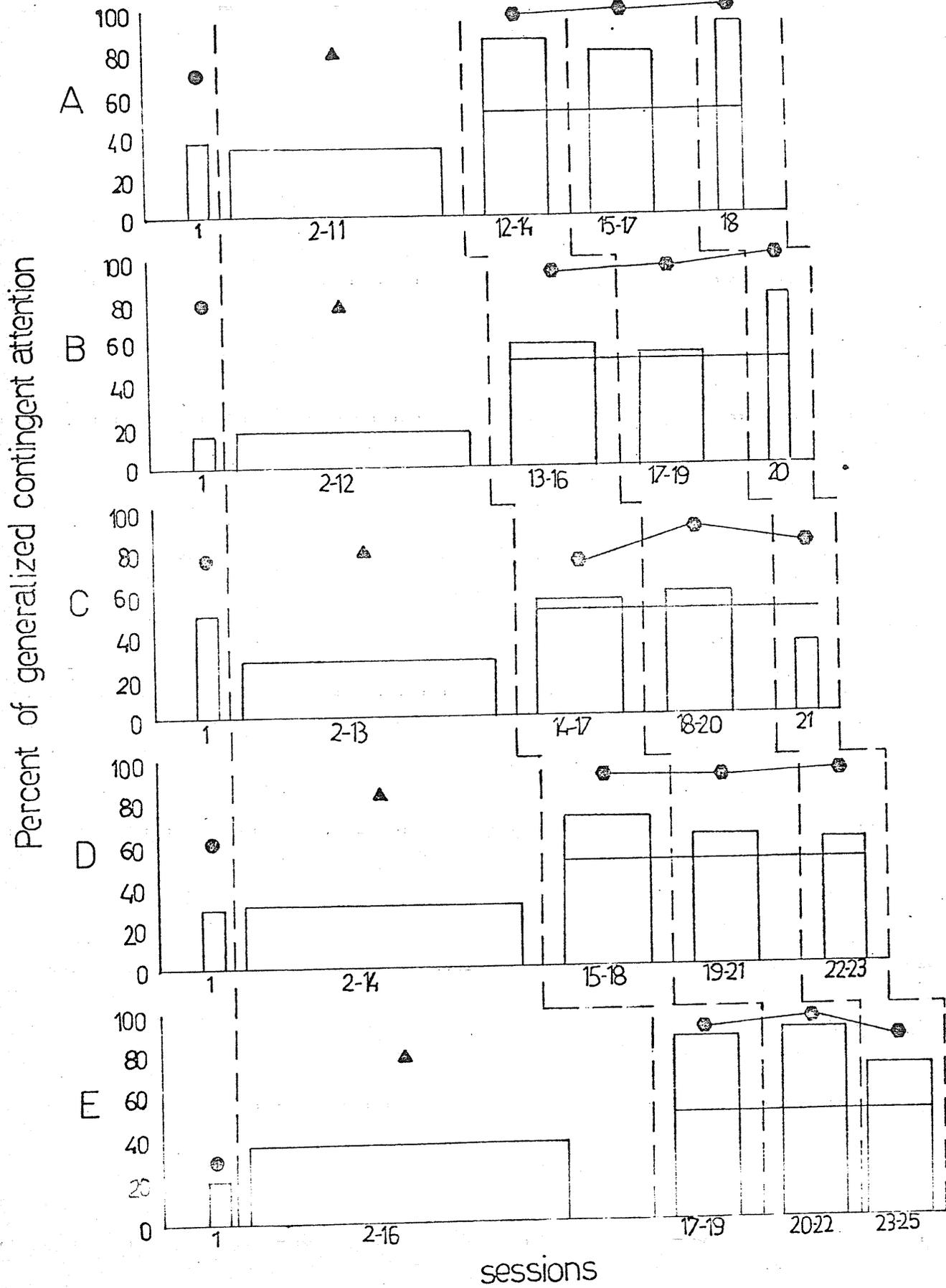
Reliability Percentages among Experimenter and Subjects
during Self-Recording Training.

SUBJECTS	Quality Self Recording Sessions					Quantity Self Recording Sessions			
	1	2	3	4	mean	1	2	3	mean
A	100	100	80	-	93	53	53	47	51
B	90	60	100	70	80	64	60	97	74
C	70	100	50	70	72	48	44	60	51
D	100	60	70	90	80	33	45	67	48
E	100	90	70	-	87	48	63	93	68

Figure Caption

Figure 1. Mean percentages of quality (circles and triangles) and quantity (bar graph) of generalized contingent attention per subject across experimental conditions. The horizontal lines represent criterion for quantity of generalized contingent attention (50%). Width of bars represent the proportional duration of the experimental conditions. The experimental conditions were: Baseline (B), Post-Workshop, Self-Recording Training (T), Feedback Only (F.O.), and Follow-up (F.U.).

B Post-workshop Self-recording System



APPENDIX A

Appropriate Resident Behaviors

- Compliance:
Follows or approximates instructions, suggestions, requests within 10 seconds. (Vague instructions like "Be good" or "behave yourself" are excluded as irrelevant.)
- Language:
Says audible words or makes audible sounds approximating words in response to requests, instructions, demonstrations, or greetings, or to draw attention to events in the environment ("Look!").
- Social
Looks, smiles, waves, cuddles, hugs, touches, caresses, holds (gently) hand, body, garment, points at, shares, co-operates with, helps others.
- Activity:
Engages in acceptable use of activity, e.g., singing, humming, dancing, clapping to music, walks, runs, plays with toys in a non-destructive way, sits oriented to the T.V.

Miscellaneous

- arranges clothes, buttons, zips up, buckles belt or shoes, ties up shoes, tucks in shirt, hitches up pants or socks, cleans clothes removing food, etc.

Note: "Neutral" behaviors are scored as appropriate.

Inappropriate Resident BehaviorsViolent or Destructive Behavior

- | | |
|--|--|
| - spits on others | - rips, tears, or chews public or private property |
| - pushes, scratches, or pinches others | - breaks windows |
| - pulls other's hair, ears, etc. | - mistreats furniture |
| - kicks, strikes, or slaps others | - damages clothes |
| - throws objects as weapons at others | |
| - chokes others | |

Anti-social Behavior

- | | |
|---|--|
| - runs away | - whines or screams |
| - wanders away | - closes eyes to avoid doing a task |
| - has temper tantrums | - threatens others |
| - teases others | - uses obscene or hostile language |
| - disrupts other's play or work activity | - refuses to participate or associate in groups in or outside identifiable activities. |
| - makes loud noises | |
| - does not comply or approximate compliance within 10 seconds | |

APPENDIX A (continued)

Withdrawal

- keeps away from other residents
- ignores things seen or heard around him
- lies or rolls on floor or bench
- unoccupied during group activity

Self-Stimulating and Stereotyped Behaviors

- rocks body back and forth
- waves or shakes parts of body repeatedly
- moves or rolls head
- swings or twirls objects back and forth
- induces own seizures
- induces emesis
- chews on inedibles
- eats inedibles
- takes off clothing
- masturbates
- hyperventilates
- sucks, bites, or chews on hands
- hits self
- bites self
- bangs head
- slaps or strikes self
- pulls own hair
- gouges or pinches self

Inappropriate Interpersonal Manners

- talks or babbles too close to people's faces
- blows on people's faces or blows nose without tissue
- burps at others
- kisses, hugs, or licks others inappropriately
- touches people inappropriately
- removes clothes at inappropriate times
- messes clothes
- drills

Eccentric Unacceptable Habits

- laughs inappropriately
- hangs on others and does not let go
- sniffs at people and things
- pulls thread out of clothing
- plays with feces or urine
- sits with maladaptive posture
- repeats instructions, suggestion, or request (echoic behavior)
- mouthing or talking inaudibly when able to speak.

APPENDIX C

Dear Students:

You have been selected to take part in a research project designed to assess better methods of training the summer relief staff in handling the residents. This type of evaluation is important because, hopefully, it will give us information on more effective ways of training staff in the future.

The project involves the following steps: first of all, we would like to make some observations of your interactions with the residents on the ward where you will be working. These observations will be done during the morning of June 29th and will indicate to us what kind of things to teach you. Second, you will have a group training session during the afternoon of June 29th. Third, we would then like to make some more observations during the summer to assess the effects of the training session.

The data collected by us during the observations is confidential. That is, we won't be showing and/or discussing it with your supervisors or anybody else. Naturally, we won't be able to show it to you during the project because this could certainly have an influence on your behavior. Therefore, we ask you to bear with us and at the end of your work here, we will be happy to show you the results obtained, as well as discussing or answering any questions you might have about the research project.

If for any reason you are unable to participate in this project, please let us know immediately because arrangements will have to be made.

Finally, we hope this research project turns out to be a good learning experience for all of us.

Good luck and have a nice summer!

Sincerely yours,

Lucia Albuquerque,
Graduate Student in Psychology,
University of Manitoba.

Dr. Garry Martin,
Associate Professor of Psychology
University of Manitoba

APPENDIX D

Dear student,

We have completed one month of data collection by now. In general your performance seems to be adequate and similar to the performance shown by the other summer relief staff; in fact, sometimes your performance has been very similar to the permanent staff members of the institution.

Nevertheless, one of the difficulties we found in gathering this data is that the quantity of interactions you have with the residents during the observations is considerably low. In other words, sometimes we are not gathering all the information we would like because your percent of interaction with the the residents has been less than 50% of the observation time.

Therefore we have developed a procedure to help you improve the amount of time you interact with the residents. The procedure involves self-recording by means of a wrist-counter the quantity of interaction you give to any resident in a five-minute period. At the end of the five minute period we will be able to compute the percent of the time you've spent interacting. We think that a reasonable criterium would be 50% or more of interactions.

Remember that a interaction has been defined as anytime that you:

- talk to a resident and/or
- touch a resident and/or
- give or take something away from the resident.

This self-recording exercise will occur at least for three mornings. In the afternoon we will proceed taking data as usual but this time we will always tell you at the end of the observation session what your percent of interaction was, so that you will always know where you stand in relation to the criterium. After you read these instructions, we will explain the self-recording procedure in more detail and answer any of your questions.

Thank you very much,

APPENDIX E

41.

NAME _____ DATE _____ TIME _____ Loc. _____									
1	2	3	4	5	6	7	8	9	10
R S	R S	R S	R S	R S	R S	R S	R S	R S	R S
A P	A P	A P	A P	A P	A P	A P	A P	A P	A P
A N	A N	A N	A N	A N	A N	A N	A N	A N	A N
I P	I P	I P	I P	I P	I P	I P	I P	I P	I P
I N	I N	I N	I N	I N	I N	I N	I N	I N	I N
<p>Results:</p> <p>% A - P = _____ % A - N = _____</p> <p>% I - N = _____ % I - P = _____</p>									

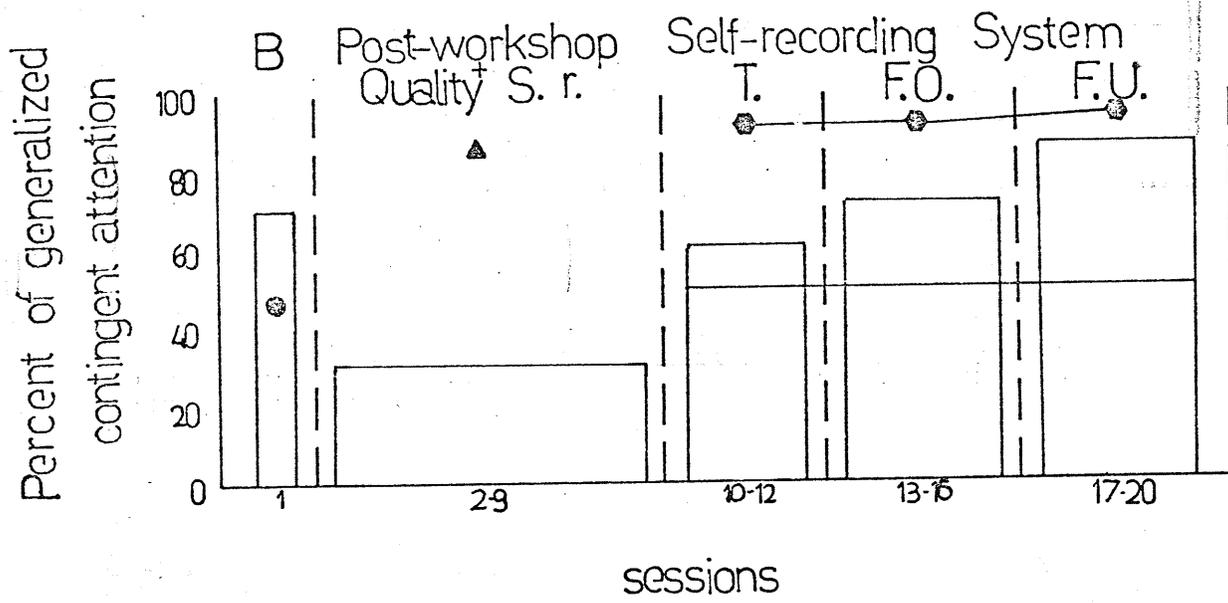
Figure Caption

Appendix F. Mean percentages of quality (circles and triangles) and quantity (bar graph) of generalized contingent attention for the Pilot Subject across experimental conditions. The horizontal lines represent criterion for quantity of generalized contingent attention (50%). Width of bar represents the proportional duration of the experimental conditions. The experimental conditions were: Baseline (B), Post Workshop, Self-Recording Training (T), Feedback Only (F.O.), and Follow-up (F.U.).

Appendix G.

1 - 6 Percentages of quality (circles and triangles) and quantity (bar graph) of generalized contingent attention for Pilot Subject and Subjects A, B, C, D, and E for Baseline (B), Post-Workshop, Self-Recording Training (T), Feedback Only (F.O.), and Follow-up (F.U.).

APPENDIX F



Pilot Subject

44.

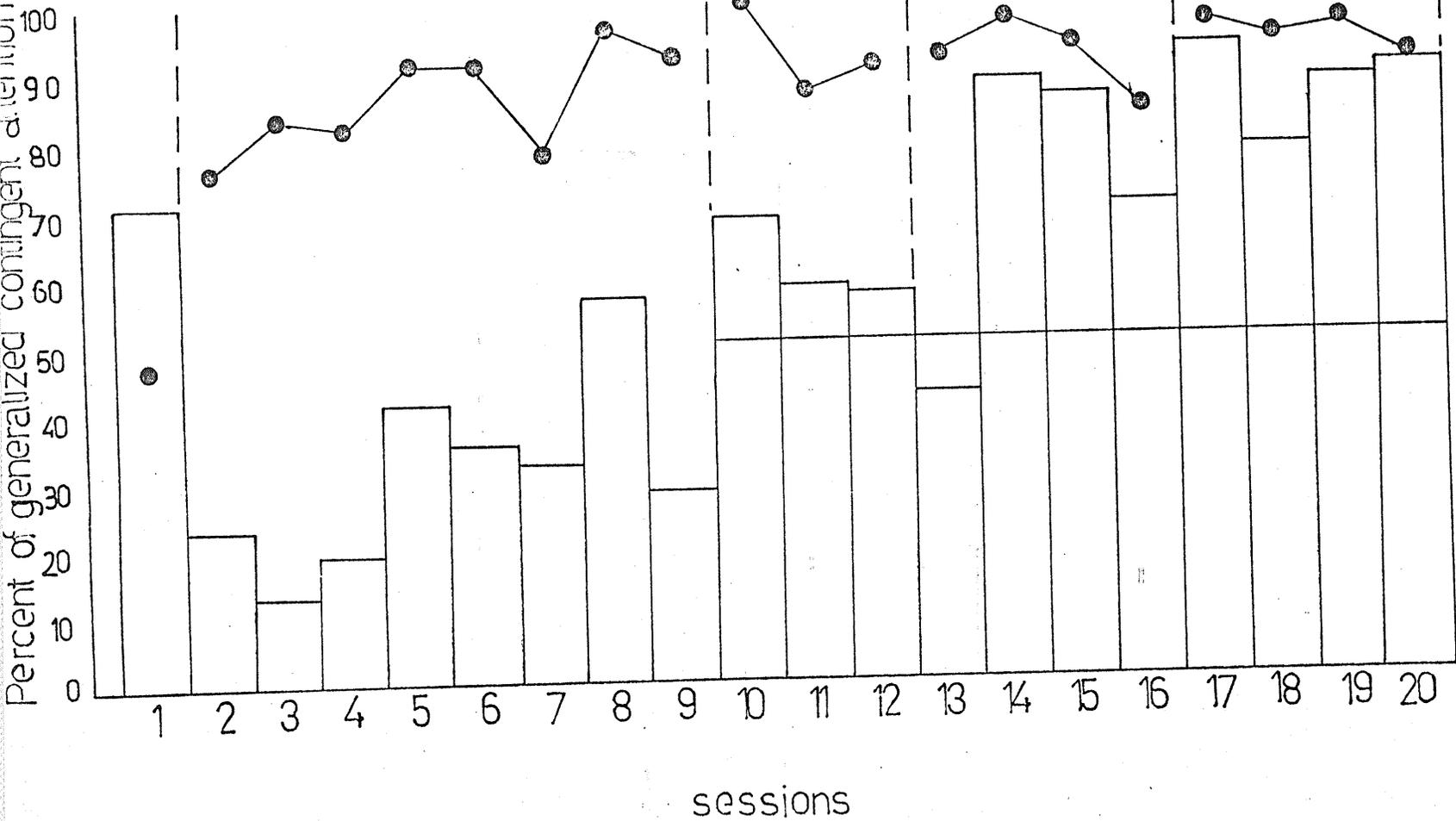
B

Post-workshop
Quality Self-recording

Quantity
self-
recording

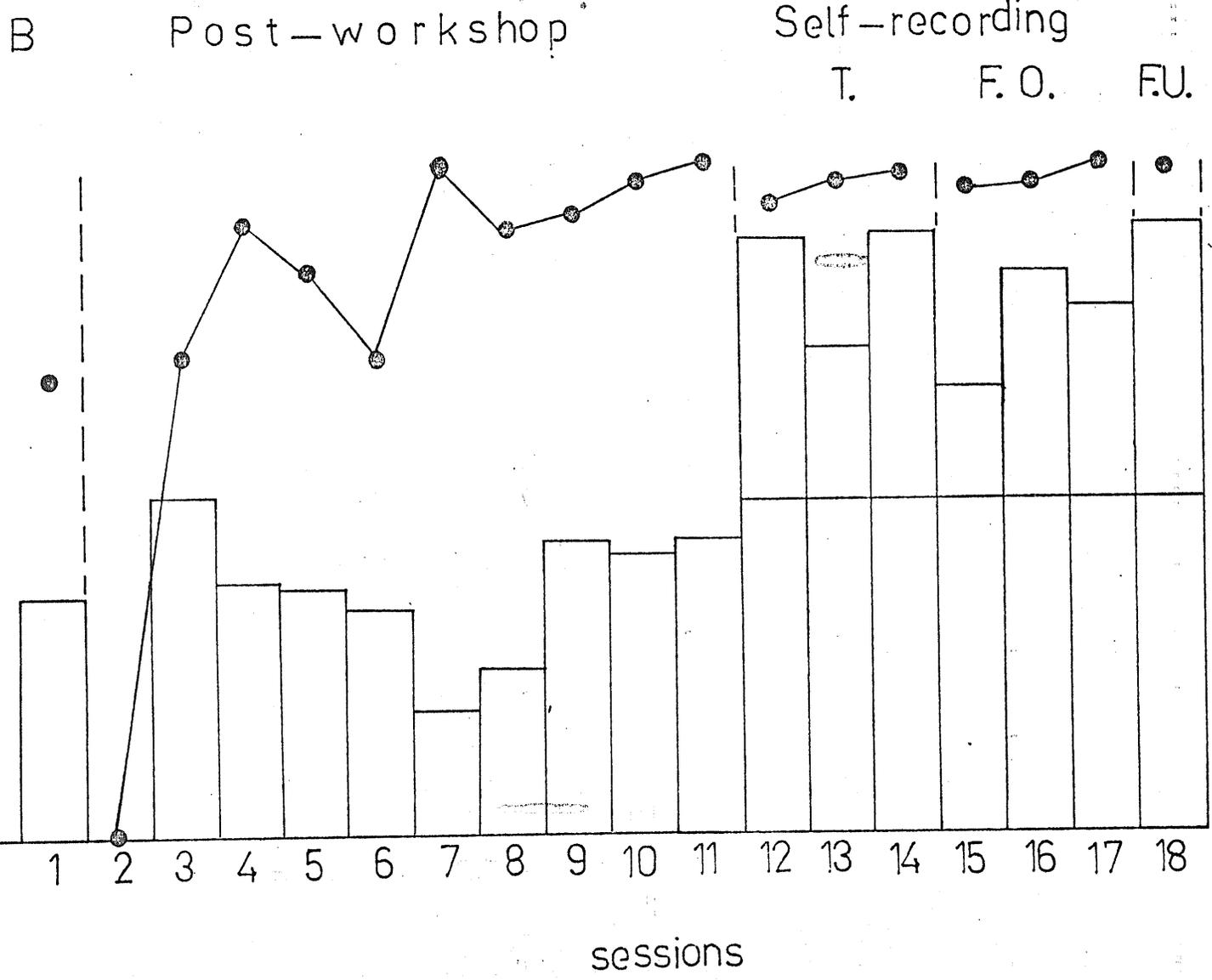
Feed-back
only

Follow-up



Subject A

45.



Subject B

46.

B

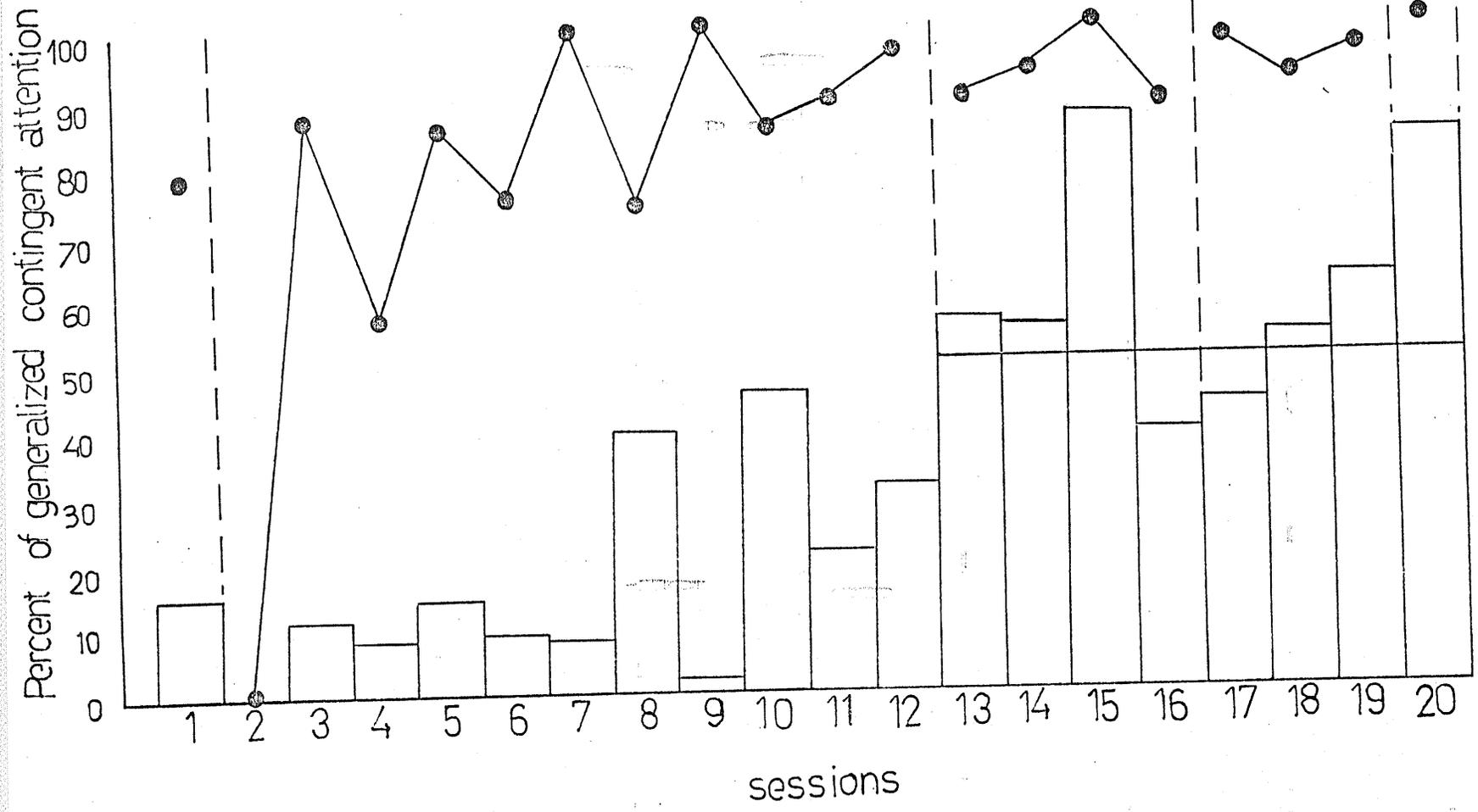
Post - workshop

Self - recording

T.

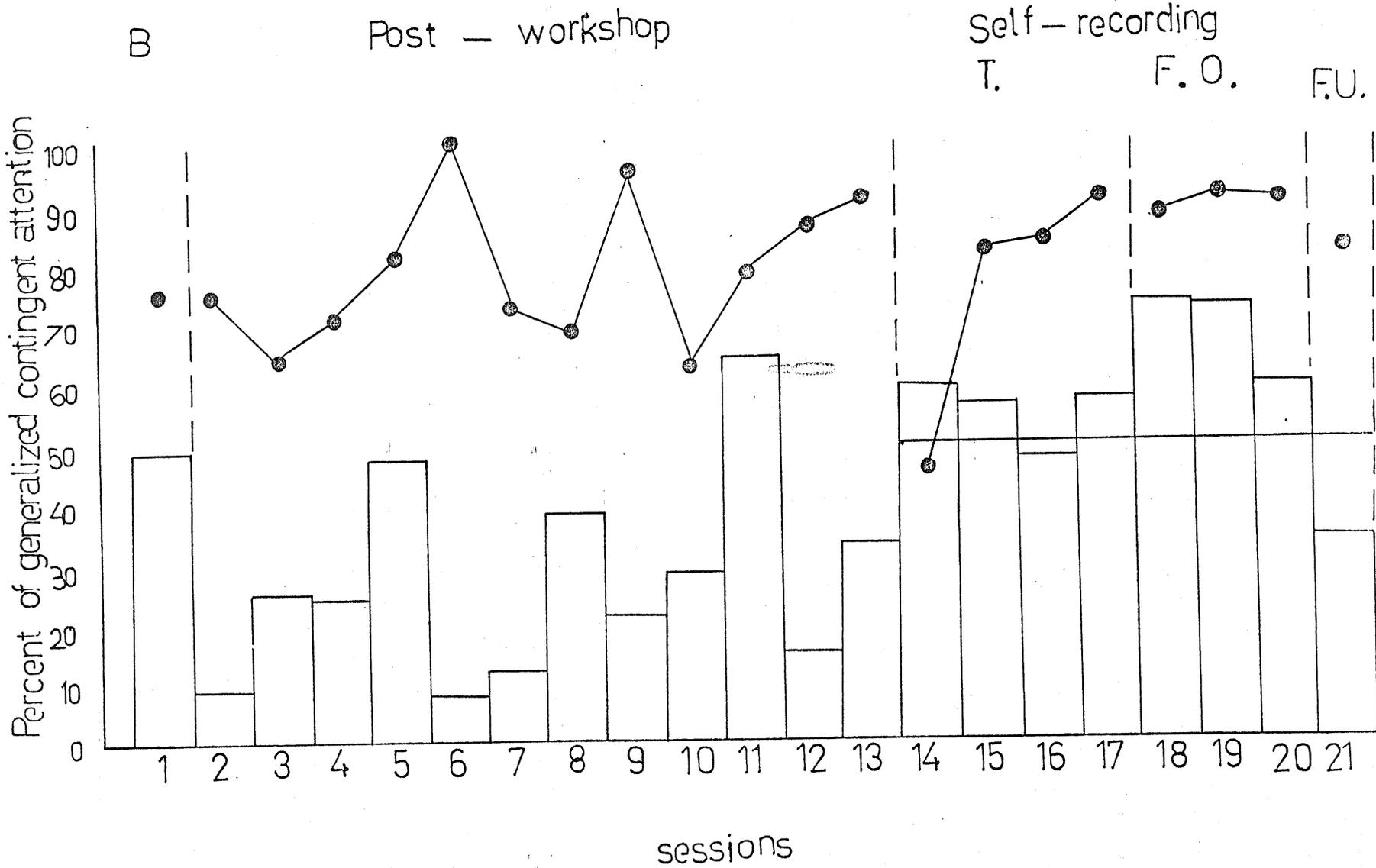
F.O.

F.U.

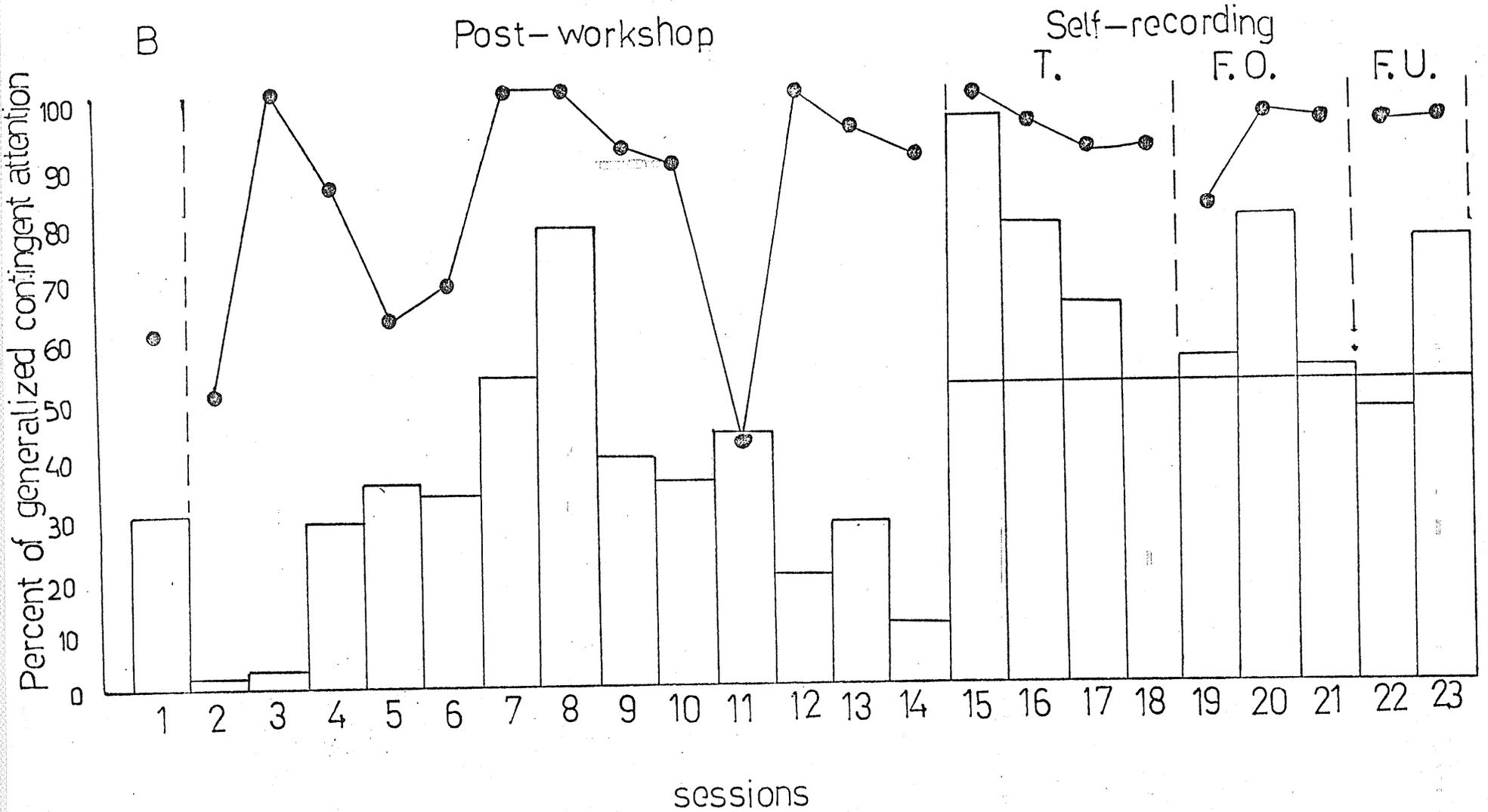


Subject C

47.



Subject D



Subject E

49.

