The Effects of Intermittent Feedback on the Verbal Communication Skills of Therapy Supervisors

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THE EFFECTS OF INTERMITTENT
FEEDBACK ON THE VERBAL COMMUNICATION SKILLS
OF THERAPY SUPERVISORS

by
Silva Goncalves

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
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Silva Goncalves
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CHAPTER I

Introduction

Analysis of the problem

The problem, as interpreted by the researcher, was one of a staff's deficiency in verbal communication skills. A group of staff members, referred to as "therapy supervisors," exhibited difficulties when analyzing, verbally evaluating, and giving suggestions to therapists.

The therapy supervisors constituted a selected group of staff whose services became necessary following pilot experiences at the Program for the Severely Mentally Impaired, Kalamazoo, Michigan. The program serviced an approximate number of 50 severely mentally impaired children within the age range of two to twenty-five years. During the winter of 1971, six students from Western Michigan University assisted in the training of retarded children at the Program for the Severely Mentally Impaired. The successful results obtained with the students' participation prompted attempts to increase the number of students working at the center. Students, henceforth referred to as "therapists" received academic credit for their participation in the training program.

Therapists who exhibited advanced skills when working with children were hired on a part-time basis as therapy supervisors, averaging between 10 and 20 hours of work per week. As therapy supervisors, their job functions consisted of supervising therapists...
working with their clients or in individualized training situations. In order to monitor effectively, the therapy supervisors were required to learn the specific guidelines on how to work with specific children; then they were assigned to supervise therapists working with these children.

Supervising consisted of each therapy supervisor observing individual therapists twice a week while the therapists worked with selected children. After a few minutes of observation, written and verbal feedback was given by the therapy supervisor in attempts to develop more effective training skills in the therapists.

Later, at the time this study was conducted, the number of therapists working in this program had increased from the original six to seventy-five. At the end of the semester preceding this study, a total of 64 therapists were asked to report their experiences at this program. Approximately 30 of those therapists reported their concerns about the ineffectiveness of communication between therapy supervisors and therapists. Approximately only five minutes were available between training sessions for the therapy supervisors to discuss therapy-related issues with the therapists under their supervision. The resulting problem was that only a few issues could be covered in this short period of time.

Three solutions were proposed. They were: (1) to shorten therapy time; (2) to hire more therapy supervisors; or (3) to teach the present therapy supervisors more effective communication skills. The first suggestion was temporarily considered and then discarded, because shortening the duration of a therapy session was regarded as
depriving the children of their already limited training time. Hiring more therapy supervisors was not regarded as a plausible alternative, considering the limited budget under which the program operated. In addition, after reviewing a few sample tapes of the therapy supervisors' verbal feedback to the therapists, it was concluded that some therapy supervisors were able to discuss therapy-related problems in that five- to ten-minute span of time even though others could not. It was also evident that the majority of the therapy supervisors had verbal behavioral deficits and spent a great amount of time giving the therapists long and detailed explanations which were often redundant. The need for training and refinement of the therapy supervisors' verbal communication skills was then an obvious problem which fostered interest by the researcher and subsequent implementation of this study.

**Context of the study**

The purpose of this study was to develop a feedback system to teach effective communication skills to therapy supervisors working at the Kalamazoo Program for the Severely Mentally Impaired. This was to be accomplished by:

1. Training therapy supervisors to use a greater variety of technical terms;
2. Training therapy supervisors to use technical terms more frequently;
3. Teaching therapy supervisors to use technical terms correctly;
4. Teaching therapy supervisors to be more specific when giving verbal feedback to therapists by pinpointing features of the therapists' behavior which were considered desirable or

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undesirable and recommending whatever changes were necessary to ascertain success to ongoing therapy projects;

5. Teaching therapy supervisors to stress positive features of the therapists' performance but still look for aspects of that performance which needed improvement and to tell the therapists about these needed changes even though that would result in instances of negative feedback.

At this point, one may question the value of using technical language and ask how speaking in such terms would facilitate communication. It would seem plausible to state that almost all fields of science, pseudo-science, and professional work have made use of certain words which have become popular and have also become indispensable in the communication processes among their leaders, followers, and beneficiaries. These words may be general terms which have, over time, gained specific meanings in context; or they may be words used exclusively in a scientific-technical framework.

In physics and chemistry, scientific symbols such as $\text{H}_2\text{O}$ and $\text{O}_2$ carry specific meanings. They represent chemical structures of great significance to scientists. Outside the laboratory, when talking to members of their families or while eating in a restaurant, the same scientists will replace those symbolic terms by other more popular equivalents, such as "water" and "oxygen." Another example, "cerebral palsy," is provided by the field of physical therapy. This term, once learned and correctly used, implies physical and mental states of a human organism easily identifiable by students, professionals, and therapists. As final examples, the words "reward" and "punishment" are commonly employed by laymen. In the field of psychology, their use is more specific to contingency paradigms which constitute
the basic principles of the science of human behavior. After further
investigation of its effects, a reward may or may not be called a
"reinforcer," depending on the effects it has on behavior. By the
same token, an "aversive stimulus" may or may not be labeled a "pun­
isher." Such stipulations are of crucial importance in determin­
ing the accuracy of technical verbal usage and in the exchange of
accurate information both in theory and in practice.

Technical terms are not simply a function of professional snob­
bishness. Their value in communication is immense. The accurate use
of certain technical terms saves time and avoids boring, repetitive
definitions. Johnston and Johnston (1972) wrote that "... the
stringent requirements of a multiple baseline design allow the clear
conclusion that the changes in the children's rates of correctly and
incorrectly saying their speech sounds were the result of the
described reinforcement procedures" (p. 237). The two main terms in
this statement, "multiple baseline" and "reinforcement," imply a
variety of conditions which would have to be carefully explained in
order to communicate them to someone outside the circles of research
in education and psychology. For these authors, however, "multiple
baseline" represents an unique experimental design which involves
conditions of considerable importance to a study; and "reinforcement
procedures" suggests that a specific stimulus-response relationship
was in effect as part of a contingency structure accountable for
bringing about behavioral changes.

The examples provided so far were intended to clarify why it
was assumed that the use of technical language, in many situations,
makes communication more precise and objective. In the examples
given, the lack of technical terms would have resulted in long
definitions of conditions and phenomena whose meanings would drift
away and vary from time to time.

The concern exhibited for the development of procedures to teach
and understand communication is inspired by the popularly known needs
and interests in human communication which go beyond this immediate
problem in the Program for the Severely Mentally Impaired. At this
point, a theoretical background in communication was considered cru­
cial to facilitating insight into the communication problem dealt
with in this study.

Related literature

Communication, a focus of study by various fields of science and
education, varies in definition and, therefore, increases in com­
plexity for researchers. Smith (1966) defined verbal communication
as the "reciprocal exchange of signals" and explained that communica­
tion is more helical than circular because it involves interaction and
feedback between sender and receiver. Smith called this exchange
"reciprocity." The "signals" or "stimuli" exchanged between "senders"
and "receivers" are decisive components of the communication process;
thus justifying the present experimental efforts to create sets of
stimuli (technical terms) to be used in similar situations. The need
to communicate messages clearly within a limited interval and still
ascertain quality and quantity of content constitute a logical justi­
fication in our time.
Mayo (1945) had a more informal definition of the "communication" term. He defines it as "the capacity of man to express his feelings and ideas to others, the capacity of individuals to communicate effectively and intimately with each other." This definition accentuates another level of communication. Its differential value is important to researchers, as it singles out properties of informal communication which are not dealt with in the present study.

Wiener (1948) explained communication in mathematical terms. According to such a theory, a given measure of the amount of information can be estimated. In this case, the amount of information per items is simply the logarithm (to the base two) of the number of possible choices. For instance, each letter of the alphabet carries \( \log_2 {26} \approx 4.70 \) bits of information; in decimal digits, the amount per digit is \( \log_2 {10} \approx 3.32 \) bits. The need for objective data in scientific investigations is satisfied in this theory. The example presented prompted computational methods which were crucial in studying the effects of the intervention plan designed by the researcher.

The above definitions served as brief introductions for the researcher to the general conceptual analyses of the communication process. To further analyze the communication process, a review was made of a study in which the authors presented some of the factors affecting communication.

Culbertson (1960) discussed several variables which influence communication: (1) motivation will influence the amount of attention given; (2) concern and expectation will affect the meaning perceived by the receiver; and (3) the greater the disparity of values between
communicator and receiver, the greater the probability of misinterpretation. The major general implication of Culbertson's outlined variables is that the individual's communication is affected by the history of interaction between them. A more general implication is that covert behaviors in the receivers' repertoires will differentially interfere or facilitate the communication between them.

Specific variables which function as motivators or barriers to communication are unique to situations and to the people interacting. The unique interaction of interest to the researcher is that between therapy supervisors and therapists. The variables of concern in this unique context are presented in a later chapter.

Up to this point, it seemed clear that communication had been dealt with on a rather scientific basis and that measuring and changing the content of communication was not a novel idea. Next, a review was made of the theoretical implications of some studies directly related to the present research. Some of these studies suggested ways for improving one's communication skills.

Janis and King (1975) explained how an individual's communication skills can be changed through role playing. This type of exercise can induce changes in personal opinions and attitudes toward others. These authors stated that in recent years psychodramatic techniques involving role playing have been developed and put into practice in adult education programs, leadership training, employee counseling, and psychotherapy. Further, role playing usually involves feedback from a trainer or director who, in that situation, performs a role very alike to the one performed by the researcher in the present...
Verplanck (1955), in a controlled situation, demonstrated how the frequency of communication could be increased in the subject's repertoire. Verplanck's experimental assumptions were:

1. "Apparently heterogeneous human verbal behavior falls into comparatively simple operant response classes; hence, anyone is susceptible to conditioning." For example, teacher participation in group discussions and in the giving of opinions during staff meetings falls into this category.

2. "Classes of environmental events can be isolated that have the property of altering any behavior on which their occurrence has depended." As an example, a school principal may encourage the participation of others by listening to them and by reinforcing their voluntary verbal participation.

Peterson, Goldbaker, and Pace (1974) suggested that "mental practice" helps to make communication perfect. First, the authors explained that the individual communicator has to realize that many of his actions, feelings, and behaviors are the result of his images and beliefs. It was suggested that mental pictures offer him an opportunity to practice new responses and attitudes. This is possible, the authors explained, because the nervous system cannot discriminate between the "real" experience and one that is only "imagined."

The authors mentioned a study by R. A. Vandell which proved that mentally practicing basketball free throws resulted in an increase of 23 percent in accuracy, while actually practicing in the real situation resulted in a 24 percent increase. These results were contrasted with a control group, which showed no increase when neither practicing procedure was in effect. Such mental exercise was assumed to be widely used by salesmen, politicians, coaches, scientists, and possibly some therapy supervisors.
The unquestionable importance of effective communication skills to human organizations has deserved all of the theoretical background paid to it. Nevertheless, of greater significance to the present study are the applied techniques of research on verbal communication and the related studies on staff training.

In the area of teacher training, Cossairt, Hall, and Hopkins (1973) tested the effects of instruction, feedback, and feedback plus verbal praise in attempts to modify a staff's verbal communication. The staff participating in this study were elementary school teachers whose verbal behavior in the classroom was measured in terms of the frequency of positive verbal feedback they gave to their pupils. Results indicated that feedback and instruction by the experimenter were not convincingly effective in changing the staff's verbal behavior, but feedback combined with social praise had a convincing effect in increasing such behavior. It was further concluded that changes of greater significance in the staff's positive verbal feedback to pupils resulted when instructions, feedback, and feedback/praise were all combined during training.

In a similar study by Hoosein (1973), a 36-week instructional behavior and skill development program was implemented, aiming to improve the communication skills of teachers. The instructional behavior and skill development program was found to have effectively improved teachers' communication skills in the areas of teacher instructional verbal behavior, teachers' use of students' ideas, and teachers' lectures. Desirable changes in pupils' behavior were also recorded and explained as being a result of the improvements in the
teachers' verbal behavior.

Carlson (1974) questioned whether immediate verbal feedback, feedback and instruction, and the presence of equipment would have a major effect on the qualitative levels of counselor-trainees' communicative empathic verbal behavior. Three groups were assigned to the three experimental conditions, while a fourth group served as a control. Empathy was evaluated with the utilization of preperformance and postperformance audiotapes. Multicomparsions of the data indicated significant change in empathy in all experimental groups, while no change was recorded for the control group.

A study by White (1972) provided support to this present attempt to modify therapy supervisors' verbal behavior. Although there were some differences in the training techniques used and in the specificities of the target behaviors selected, there was a reassurance that the content and style of communication could be changed in order to produce more effective interactions between speakers and listeners. White tested a hypothesis which, once proved, had major implications for the teaching of communication skills as part of programs for staff development. The hypothesis was that teachers who observed models of teaching involving a high degree of indirect verbal pattern would develop a more indirect verbal pattern when teaching. Meanwhile, teachers who did not observe these models of teaching would not develop a more indirect verbal pattern. Teachers were then divided into experimental and control groups. The experimental group observed those prerecorded tapes of teaching models which, on the other hand, were not shown to the control group. At a later
phase, tapes were made of teaching instances by teachers of both groups. After careful evaluation of the tapes, it was concluded that the communication style of the experimental group was more indirect than that of the control group. It was also concluded that the audiotaped models could be desirable tools in teacher education programs.

While it has been stressed that the communication skills of therapy supervisors were the main target of interest in the present study, the researcher also bore in mind the external validity of the intended feedback-based training program. Here, another concern was to design a practical program for staff training which could later be used as a model for in-service training. A considerable number of programs for staff development further sustained the researcher's positive expectations and concerns for this feedback-based training program.

Panyan, Boozer, and Morris (1970) explained that rewarding feedback is crucial to staff development in programs for the severely and profoundly retarded. Children's progress in such programs is very slow, and the staff continues to be dependent upon feedback as a potential source of incentive. Some of the suggested forms of feedback were: trading stamps; videotape records; and comments about appropriate staff performance. In the Panyan et al. study, the authors demonstrated that the posting of feedback sheets each week resulted in a consistent increase in the percentage of training sessions accomplished by the staff of three training wards. It was further investigated and concluded that the longer the staff operated
without feedback the longer it took for desirable changes in performance to take place.

Ideally, accomplishment and success on the job are the most significant reward to staff. This is probably the case in many job situations where there is a pleasant atmosphere and where fringe benefits and social rewards are added to the intrinsic reinforcement concept. Nevertheless, the assumption of intrinsic rewards paired with a certain amount of apathy of traditional administrators have resulted in a great many years of inadequate service by staff working with the retarded. This problem of performance is also observed in sheltered workshops for the retarded, in industrial assembly lines, and in food preparation lines of quick service restaurants where jobs are often boring and represent questionable sources of intrinsic value to the worker. In such situations, the knowledge of being evaluated on the basis of performance standards reflected in the feedback given by superordinates may not suffice in producing and maintaining higher performance by the staff.

Goncalves (1974) utilized a posted evaluation system in a study designed to increase employees' speed when waiting on customers in a quick-service restaurant. Managers were trained to utilize an evaluation system which consisted of intermittent observations and subsequent daily classification of employees' performance in a point scale. It was found in that study that performance feedback alone did not consistently affect speed on the job. At a later time, however, when instructions in the form of written job descriptions were introduced and coupled with free lunches for employees who had been
evaluated as high performers, a consistent increase in employees' speed was measured. Overall improvements in efficiency were also reported. After several weeks of high performance by the employees, the study was discontinued. When feedback instruction and free lunches were discontinued, intermittent checks showed that employees' speed and efficiency had deteriorated.

Still other studies have supported the assumption that back-up rewards are not necessary and that once effective training takes place behaviors will be naturally maintained. Competing with the "intrinsic reward" theory, there is another explanation for such cases: negative reinforcement. Once a given performance criterion has been met, the staff member sees himself free from the threatening possibility of losing his job or being disliked by the superordinate. Such explanation may be clarified by reviewing a study by Peterson (1972). In that study, the author tested the effects of training in behavior modification techniques on the theoretical repertoires of psychiatric aides and their practical application when attempting to modify patients' behavior. A significant change in the staff's theoretical knowledge was reported on one part of a two-set test. It was concluded that performance feedback in the form of grades was indeed representative of the staff's mastery of concepts of behavior modification theory. Eventually, after evaluating the staff on the basis of their performance while working with clients, the experimenter found no significant gain in staff performance.

The various explanations for such results were of relative value to the aspirations of the present study. First of all, one may
reasonably assume that in the academic background of the several staff members involved the exposure to grades as variables controlling performance was of considerable conditioning effect. Grades were paired with teachers' and parents' approval, and grades were also paired with predictive admittance to graduate schools or to reasonably better paying jobs. This explains why the staff responded seriously to grades even after several years out of school. This knowledge serves, at least in part, to explain why individuals did well in situations which resulted in a grade for performance: grades had a conditioned reinforcement value. On the other hand, in this instance, one may consider grades as potential examples of negative reinforcement. Nonprofessional staff, holding jobs which offered no tenure, may have needed occasional reassurance that they were doing well. Such individuals were relieved from uncertainty when a high grade for performance was given to them.

Another consideration of Peterson's study is the fact that the staff's improved theoretical knowledge did not result in improved performance when working with clients. As far as performance on the actual job is concerned, it has been observed that staff working with retarded or psychotic patients often develop routines which are very time consuming. This considerable investment of time on "school keeping" rather than school teaching functions has been explained elsewhere as being a result of boredom, coupled with the fact that slow progress by retarded clients results in limited intrinsic rewards for the staff. This explanation is consistent with Panyan's findings and implications: whenever the concern is to increase
training time and concurrently decrease maintenance activities, the need for rewards other than praise and smiles ought to be considered. These interpretations may be further expanded, considering the many theories developed as guidelines for study and analysis of staff development programs; however, such a task is not the main concern in the present investigation.

Procedures used in staff development programs which were not based on feedback training ought to be reviewed for comparison purposes. Gardner (1972) experimented with two teaching methods in the training of 20 female institutional attendants. The two methods used were lecturing and role playing. The target areas were knowledge of behavior modification principles and ability to apply behavior modification techniques. The author's findings suggested that role playing was a more effective teaching method when the desirable outcome was the staff's ability to apply those techniques; however, lectures were more effective when knowledge of the subject matter was the desirable outcome.

The use of simulation games in teaching social workers was modeled by Ifill (1972). The author implied that by reversing the order of instruction to simulation games the players are given the opportunity to experiment and learn about behavioral principles which they would otherwise have rejected. An implication of this study, in addition to the suggested use of simulation games on staff training, is that currently in academic and professional practices there is an unsystematic philosophical rejection of certain staff training techniques. Whether by prejudice against change or by
strong support of traditional philosophies, one often encounters opposition to the implementation of new techniques. As a result of this problem, occasional academic conflicts develop; and such conflicts often work against the natural flow of scientific knowledge in the applied settings. Ifill's major thesis was that once individuals have learned about the effectiveness and plausibility of a new technique they would respond to its usage in more receptive and logical terms.

This review of the literature has covered research and analysis on theories of communication, feedback training programs on staff verbal behavior, and other staff training procedures which bear on the present investigation. The present investigation maintains a selected interest in experimenting on a feedback-based program in the controlled training of staff communication skills. This training was to be accomplished without the use of tangible rewards to reinforce staff's changes in verbal behavior. In addition, training sessions were to be kept to a minimum to maintain more realistic economic conditions for staff training.

The expected results of the study were that, after training, therapy supervisors would make frequent use of specific technical language and, therefore, avoid long, unnecessary verbiage when interacting with therapists. Furthermore, evaluation of therapists' performance would also be positively stressed; but negative feedback would be given by therapy supervisors whenever necessary. A final assumption was that technical language was a self-reinforcing behavior and that once therapy supervisors had mastered the desirable
communication skills under experimental conditions verbal behavioral change would generalize to conditions outside the experimental situation.

A careful analysis of the data will serve as a basis for discussing the results and implications of this study. Comparisons of this study and its relationship to current practices in staff development will also be presented.
CHAPTER II

Design of the Study

Setting

The present study was conducted at the Program for the Severely Mentally Impaired, housed at Grand Prairie School, 4606 Croyden Avenue, in Kalamazoo, Michigan. The program was equipped to provide training for approximately 35 children. However, in the past two years, the number of the children at the center had gradually increased, creating very crowded classroom environments. As a result, it had become difficult for teachers to provide training to all children, many of whom exhibited a variety of behavioral problems, therefore, disrupting classroom activities.

In attempts to ameliorate those conditions, six by six foot plywood therapy booths were set up in one classroom. Therapists entered booths with their assigned children, closed the curtains, and worked with the children for 30-minute sessions. Each booth was furnished with a small desk and two chairs, used by the therapist and the child. Outside the booths, there were chairs on which the therapy supervisors stood and looked over the plywood walls in order to supervise the ongoing sessions. With this arrangement, distractions were kept to a minimum.

Subjects

Eighteen college upperclassmen attending Western Michigan
University worked on a part-time basis as therapy supervisors at the Program for the Severely Mentally Impaired. Before assuming that role, therapy supervisors worked with retarded children on individual tutoring for at least two school sessions or one full semester. Previous experience, coupled with at least two years of successful undergraduate work, were the two prerequisites for individuals to function as therapy supervisors. Social skills, writing skills, and expressed interest in continuing work at the center for at least six months were additional general requirements. The therapy supervisors' job function consisted of supervising and assisting 75 therapists who were working with the children on individual tutoring programs.

Therapists were lower classmen (freshmen and sophomores) who were working at the center for academic credit. Each therapist worked with two children, one-half hour daily with each child, five days a week. Therapists were supervised twice weekly while working with each child. Therapists are discussed here for purposes of clarification only. The therapists' activities were closely related to the job function of the target subjects: the therapy supervisors.

Therapy supervisors observed ongoing therapy sessions and afterwards made suggestions on how the therapists could improve their sessions. In recent years, the numbers of children and the numbers of therapists have increased considerably. These increases were not naturally conducive to an increase in the number of therapy supervisors. The monies used to pay therapy supervisors were limited.

These conditions resulted in a problem. The therapy supervisors, in their already demanding schedules, were responsible for supervising
more therapists. A concern for effective supervision prompted observations by the researcher, who at that time was conducting other projects at the center. After carefully listening to the therapy supervisors' verbal evaluations to therapists, the researcher concluded that much of the contents of these evaluation sessions was too general and vague. The therapy supervisors needed training in communication skills so that vague statements would become distinct statements, and general remarks could become specific guidelines to their therapists.

Procedure

This study was implemented following a multiple baseline design across subjects (Baer, Wolf, & Risley, 1968). The two "subjects" were represented by morning and afternoon experimental groups. Each group was composed of nine therapy supervisors.

Each day, the therapy supervisors observed several ongoing behavioral therapy sessions. After observation, the therapy supervisors gave each of their therapists feedback and suggestions related to the sessions observed. These verbal interactions took place inside therapy booths.

The therapy supervisors were informed that the researcher was interested in developing a new system for therapy supervision. Each therapy supervisor received instructions to tape record one of the various evaluation sessions with his/her therapist each day, and the therapy supervisors were asked not to record consecutive daily sessions with the same therapist. The therapy supervisors were not
told about the dependent variables to be extracted from the tapes which were expected to change as a function of the researcher's intervention: (1) frequency of distinct evaluation statements performance; (2) ratio of positive feedback statements per session; (3) frequency of technical terms used per minute; (4) number of different technical terms used per minute; and (5) percent of correct technical terms used per daily session.

Baseline data were recorded for both groups until stabilization. After stabilization of data, training was introduced for the morning group. Training consisted of the researcher, one to three times per week, playing back to small groups of three to four therapy supervisors of the morning group evaluations recorded by one of them during preceding sessions with therapists. In addition, the researcher intermittently stopped the ongoing tape and stressed desirable and undesirable features of that recorded segment of tape.

Desirable and undesirable features were related to the dependent variables. Desirable features were: use of technical vocabulary; replacing long, unnecessary explanations; correct use of technical vocabulary; and frequent feedback specific to the therapists' performance. Both positive and negative feedback were encouraged, but it was stressed to therapy supervisors that positive feedback should always outweigh negative feedback.

Some undesirable features were: use of long discussions which could be replaced by short sentences containing technical vocabulary (In such instances, the researcher asked one of the therapy supervisors to reword what was said by using short sentences and technical

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vocabulary.); incorrect use of technical vocabulary; missing opportunities to give positive and negative feedback specific to the therapist's performance; excessive use of negative feedback; or lack of negative feedback.

In general, the researcher intermittently stopped the tape and commented on the occurrence of any of these desirable and undesirable features. In the case of desirable occurrences, the researcher stated that such occurrences were important and should be maintained. However, when an undesirable feature was noticed, the researcher stated that the therapy supervisor ought to change that and suggested the direction of change.

The researcher concluded each of these feedback training sessions by commenting on the therapy supervisors' responsibility to teach therapists to work more effectively with the children and by stressing the need for objective communication, especially when time was limited.

After gathering data for 15 sessions representing stable effects of the training procedure on the morning's performance, the researcher submitted the afternoon group to the same training conditions. Training for the afternoon group lasted 17 days. Feedback training was maintained for the morning group during training for the afternoon group.

In order to check on whether changes in the therapy supervisors' communication skills under experimental conditions were noticed by the therapists, the therapists at various times during the course of this study were asked to evaluate their therapy supervisors'
technical verbal repertoire. Evaluation consisted of a questionnaire based on Lickert's five-point evaluation scale.

Materials used

Two portable cassette tape recorders were used during the daily recording sessions. The tape cassettes used were of 90-minutes duration each. A third tape recorder was used by the researcher during feedback training sessions. A list of technical terms (see Appendix) was available as reference for the researcher and a research assistant. Part of that list was provided by Mrs. Coby Backoff, Occupational Therapist at the Program for the Severely Mentally Impaired. The remainder of the list was extracted from a thesis project submitted to The Graduate College of Western Michigan University by Alexandre Pacheco e Silva Nucci in August of 1974. Mechanical timers and stopwatches were used to check on the duration of segments of tape recordings of evaluation of therapy sessions conducted by therapy supervisors. Mimeographed forms were used in the computation of daily data (see Appendix).

Treatment of data

Each day, after all recording sessions, a graduate research assistant evaluated the contents of the tapes carrying therapy supervisors' evaluations of therapists' performance. Tapes were separated for morning and afternoon groups, and the contents of each individual supervisor's evaluation were evaluated.

1. Frequency of evaluation statements specific to therapists'
performance was computed by totaling the number of statements indicative of how a therapist was performing, or how he conducted his session, and dividing the number of statements by the duration of that session. For example, the therapy supervisor told the therapist that he was very enthusiastic and that he spoke clearly to the child but that he was not very consistent delivering pennies. These were counted as three distinct feedbacks which once divided by the duration of the session constituted a frequency datum \( \frac{3}{4.5} = 0.66 \).

2. The ratio of therapy supervisor's positive feedback specific to the therapist's performance resulted from the division of positive feedbacks by the total number of feedback statements and multiplying the results by 100. In the previous example, two of the three feedbacks were positive; in computational formula, this would be \( \frac{2}{3} \times 100 = 66\% \) positive feedback.

3. The frequency of technical terms used per minute was obtained by dividing the total instances of technical terms used by a therapy supervisor by the duration of the session in minutes. For example, in a four-minute and thirty-second session, during which the terms "differential reinforcement" and "anoxia" were used twice each, the frequency obtained was four words divided by 4.5 minutes, which equaled .88 technical terms used.

4. The number of different technical terms used per minute was computed in a similar fashion, except that each technical term used was counted only once. Using the same example, "differential reinforcement" and "anoxia" were counted as two words, which, divided by 4.5 minutes, resulted in .44.

5. Percent of terms correctly used per session was estimated by multiplying by 100 the number of correctly used technical terms and dividing the result by the total number of technical terms used (correct and incorrect.). Definitions in terminology listed (see Appendix) served as guidelines for deciding on accuracy.

After rechecking individual therapy supervisors' tapes and respective scores, the mean scores were obtained by adding the scores for all individuals in the group and dividing by the number of individuals.

The time available for each evaluation session between a therapy
supervisor and a therapist was five minutes. A stopwatch was used to
time the exact duration of each session (time elapsed between the
first and last word emitted by the therapy supervisor). Whenever a
session lasted more or less than five minutes, data were prorated.

Reliability

Reliability checks were made weekly by the researcher. The
researcher made a list of names of therapy supervisors in each group,
and each week two or three names were randomly selected from that
list. Then, the researcher listened to segments of tape containing
the evaluation of therapy sessions conducted by these randomly
selected therapy supervisors. The contents of therapy supervisors'
verbal communication were evaluated on the data computation form
(see Appendix). After computation, the researcher compared those data
on selected individuals to the data on the same individuals computed
by the research assistant. Reliability checks were made on: (1)
duration of segments of tape containing evaluations by therapy super­
visors; (2) percent agreement on the different technical terms used;
(3) percent agreement on the accuracy of terms used; and (4) percent
agreement on the feedback statements specific to therapists' perform­
ance.

Percent agreements between the researcher and the research
assistant were always 95 percent or higher.
CHAPTER III

Report of the Findings and Interpretation of the Data

Tables I and II show the mean data for all target variables for the morning and afternoon groups. Changes for both groups were observed immediately following the introduction of feedback training conditions.

Table I reflects positive changes in the morning group's performance in most target variables. The exception was the group's mean performance in percent of positive evaluation statements per session. Initially, during the first 15 days of training, there was a mean increase of 4.4 percent in positive evaluation statements. Later, during the remaining 17 sessions of training, there was a decrease of 3.0 percent in the same variable. Changes in all other variables (frequency of evaluation statements, total frequency of technical terms, frequency of different technical terms, and percent of correctly used technical terms) indicated a positive trend during the first 15 and the additional 17 training sessions.

Table II reflects positive changes in the afternoon group's performance in most target variables. The exception was the group's mean performance in percent of positive evaluation statements per session. The afternoon group was under baseline conditions for 15 days more than the morning group. Nevertheless, a similar positive change was noticed in the afternoon group's mean performance during those 15 sessions: a 3.1 percent increase. However, when this group

27
Table I
Morning Group's Means

<table>
<thead>
<tr>
<th>Target Variables</th>
<th>Sessions 1 to 20 (Baseline)</th>
<th>Sessions 21 to 35 (Feedback Training)</th>
<th>Sessions 36 to 52 (Feedback Training)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of evaluation statements per minute</td>
<td>.78</td>
<td>1.46</td>
<td>1.72</td>
</tr>
<tr>
<td>Percent of positive evaluation statements per session</td>
<td>85%</td>
<td>89.4%</td>
<td>86.4%</td>
</tr>
<tr>
<td>Total frequency of technical terms used per minute</td>
<td>2.53</td>
<td>4.36</td>
<td>5.23</td>
</tr>
<tr>
<td>Frequency of different technical terms used per minute</td>
<td>1.48</td>
<td>2.27</td>
<td>3.07</td>
</tr>
<tr>
<td>Percent of correctly used technical terms</td>
<td>86%</td>
<td>96.1%</td>
<td>99.1%</td>
</tr>
<tr>
<td>Target Variables</td>
<td>Sessions 1 to 20 (Baseline)</td>
<td>Sessions 21 to 35 (Baseline)</td>
<td>Sessions 36 to 52 (Feedback Training)</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------------</td>
<td>----------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Frequency of evaluation statements per minute</td>
<td>.62</td>
<td>.83</td>
<td>1.36</td>
</tr>
<tr>
<td>Percent of positive evaluation statements per session</td>
<td>88.7%</td>
<td>91.8%</td>
<td>79%</td>
</tr>
<tr>
<td>Total frequency of technical terms used per minute</td>
<td>2.1</td>
<td>2.0</td>
<td>5.53</td>
</tr>
<tr>
<td>Frequency of different technical terms used per minute</td>
<td>1.44</td>
<td>1.3</td>
<td>3.39</td>
</tr>
<tr>
<td>Percent of correctly used technical terms</td>
<td>85%</td>
<td>83%</td>
<td>97%</td>
</tr>
</tbody>
</table>
was submitted to 17 days of training, a mean decrease of 12.8 percent was tabulated.

The changes in performance of the morning and the afternoon groups in some instances exceeded 100 percent increases. Those changes in the data tabulated in Tables I and II are also represented in Figures 1 through 5.

During the first 15 days of training conditions for the morning group, the afternoon group did not receive feedback training. Figures 1, 3, 4, and 5 display the accelerative trends in performance for the morning group; while the afternoon group's performance remained practically unchanged.

The increase in percentage seen in Figure 2 was minimum. The researcher had no intention to discourage therapy supervisors from giving negative feedback to therapists. However, during training sessions, it was frequently stressed that therapy supervisors maintain a high percentage of positive feedback to therapists.

After 15 sessions under training conditions, distinct improvements in the morning group's performance were noticed; while the baseline performance level remained unchanged for the afternoon group. The logic of experimental control set the occasion for replication across subject (afternoon group). Concurrent with the implementation of feedback training for the afternoon group, the researcher considered suspending training for the morning group. However, some additional considerations suggested otherwise. For one thing, findings from previous research prompted the need for maintaining training programs on the job even after desirable performance levels had

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Figure 1: The mean frequency of distinct evaluation statements per minute for the morning and the afternoon groups of therapy supervisors.
Figure 2: The mean percent of positive feedback statements per session by the morning and the afternoon therapy supervisors.
Figure 3: The mean total frequency of the technical terms used per minute by groups of therapy supervisors.
Figure 4: The mean frequency of the different technical terms used per minute by the morning and the afternoon therapy supervisors.
Figure 5: Therapy supervisors' percent of correctly used technical terms per session.

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been reached (Goncalves, 1974). On the other hand, this feedback training program also served as a direct form of supervision of therapy supervisors; moreover, the feedback training was not only effective but also economical, timewise. Therefore, its continuation was highly recommended. Finally, the changes accomplished with training resulted in improved staff performance which was needed at the Program for the Severely Mentally Impaired; and practical considerations led to a decision to maintain training for the morning group.

Subsequent to that decision, a new experimental phase was introduced: the morning and afternoon groups were both under feedback training conditions. That phase continued for 17 sessions, which were accentuated by sudden improvements in performance for the afternoon group and by additional (although smaller) changes for the morning group (see Tables I and II and Figures 1, 3, 4, and 5). The additional changes in the target variables justified the continuation of feedback training for the morning group despite that group's previous training exposure.

The high percent of changes under experimental conditions was expected to generalize to other nonexperimental conditions. For instance, the therapy supervisors' verbal evaluations to therapists were recorded once a day; however, each therapy supervisor conducted at least four or five evaluations each day. The researcher's curiosity was on whether changes in the therapy supervisors' verbal repertoires, computed from data extracted from segments of tapes, had generalized to the nonrecorded verbal evaluations. To answer that
question with experimental precision, it would have been necessary to record those instances of evaluation without the therapy supervisors knowing that those evaluations were being recorded. However, that alternative was not very popular at that time, as its implementation might have resulted in a miniature replication of the "Watergate" tapes controversy. The researcher then opted for an indirect measure--Lickert's five-point evaluation scale.

The Lickert five-point evaluation scale was used by the researcher, who, in an isolated situation, instructed therapists on how to use the scale. Morning and afternoon therapists were asked to evaluate each of their therapy supervisors several times throughout this study. These evaluations were not signed by the therapists, and the only ones to read them were the research assistant and the researcher.

The therapists were asked to evaluate their therapy supervisors on the basis of: (1) how the therapists comprehended the supervisors' evaluation feedback; (2) how the therapists rated the frequency of the supervisors' technical verbal usage; and (3) how the therapists rated the supervisors' overall communication skills. The possible evaluations were: excellent; very good; average; needs training; poor. The highest possible evaluation (excellent) worthed five points in Lickert's scale; the second highest (very good) worthed four points; and so on.

The mean evaluation scores for the morning and for the afternoon groups were computed from the data obtained via Lickert's scale (Figures 6, 7, and 8). The therapists who worked on the morning shift
Training for Morning and Afternoon Groups

Baseline
Feedback Training for Morning Group
Training for Morning and Afternoon Groups

Figure 6: Therapists' mean evaluations of how well they comprehended their therapy supervisors' evaluation feedback. The highest and lowest possible scores were five and one respectively.
Figure 7: Therapists' evaluations of the frequency of therapy supervisors' technical verbal usage. Same evaluation scale as in Figure 6.
Figure 8: Therapists' rating of their therapy supervisors' overall communication skills. Same evaluation scale as in Figure 6.
evaluated their comprehension of the morning group of therapy supervisors' evaluation feedback. The mean baseline score was 4.4 (between excellent and very good), while the mean score obtained under training conditions was 4.6. The mean baseline score given to the therapy supervisors' use of technical terms was 3.9, under baseline conditions; it increased to 4.2 during training. The therapists' overall rating of their supervisors' communication skills had a baseline mean of 4.05; after training, that mean changed to 4.3.

The afternoon group was under baseline conditions for 15 days longer than the morning group. Nevertheless, during those days of extended baseline, an increase in evaluation of the afternoon group of therapy supervisors was recorded by therapists working the afternoon shift. The data compiled put into question the possibilities of positive correlation between changes in the therapy supervisors' verbal repertoire, as a function of training, and the therapists' perceptions of these changes.

The mean evaluation scores assigned to the afternoon group are shown in Figures 6, 7, and 8. The therapists' evaluations of their comprehension of the afternoon group's evaluation feedback yielded a mean score of 4.05 during baseline, and 4.2 during training conditions. The rating of the therapy supervisors' use of technical terms had a mean score of 4.1 under baseline conditions, and the same mean score was assigned under training conditions. Finally, the rating of the therapy supervisors' overall communication skills resulted in a mean score of 4.0 under baseline; and 4.1 under training conditions.

After examining data obtained by probing the therapists'
perceptions to changes in the therapy supervisors' verbal repertoires, the researcher assumed that, from the beginning, the therapists had overrated the supervisors' verbal skills. This assumption reflected the fact that by overrating during baseline conditions the therapists left themselves with a small margin for giving higher evaluations in future instances.

Blum and Naylor (1968) explained that during evaluations evaluators are often influenced by various traits of the individuals being evaluated. That possibility, in itself, raised questions about the data obtained via Lickert's evaluation scale. In some instances, therapy supervisors who were known for their friendliness received higher evaluations on their communication skills than therapy supervisors who were more fluent and who gave more specific evaluation statements. Considering that the main purpose of this study was not to battle with problems such as the lack of human objectivity and the lack of precision in evaluations, the researcher redirected his focus of interest toward the conclusive effects of feedback training on staff communication skills.
Summary, Conclusions, and Recommendations

Summary

In this study, the researcher has demonstrated how the verbal communication of therapy supervisors was changed under feedback training conditions. It has also been demonstrated that the researcher's feedback to small groups of staff was a practical and economical training situation. In small groups, therapy supervisors often modeled verbal behaviors which eventually were mastered by other staff members present. Also, the researcher's feedback to small groups resulted in considerable time saved as compared to giving feedback to staff individually.

The importance of this study can be measured by the results obtained in improving staff communication skills at the Kalamazoo Program for the Severely Mentally Impaired. The changes in the staff's communication skills represented an immediate solution to a real problem of communication. With improved performance in verbal communication (especially in the sense that therapy supervisors showed an increased rate of specific evaluation statements per minute), the staff was able to cover various therapy-related problems, therefore, meeting their main job functions: to evaluate and to provide guidelines for changes in the therapists' performance.

The increased frequency of evaluation statements was a very desirable change. These specific statements were discriminative
stimuli which prompted and set directions for changes recommended by
the therapy supervisors. These evaluation statements also stressed
what therapists were doing well and functioned as praise (and rein-
forcers) to the therapists.

The percentage of positive feedback was maintained at a level
below 100 percent following the researcher's assumption that rarely
was a therapy session conducted in a 100 percent desirable fashion.
Either the therapist lacked enthusiasm or the child exhibited lack
of interest or motivation toward the session. Some other instances
when therapists received negative feedback were when they exhibited
behaviors such as over using reinforcers, beginning or terminating
the therapy session out of time, giving unclear presentations of
verbal guidelines to the children, showing lack of creativity, etc.
In those exceptions when both therapist and children performed at
their best, naturally the absence of negative feedback was justifi-
able and a high frequency of positive feedback statements was due.

Probably the true benefit of increased frequency and variety of
technical terms in the therapy supervisors' repertoires was consis-
tency. After stabilization of a well-defined pattern of verbal
behavior based on selected technical terms (which carried very
specific meanings), the therapy supervisors started skipping long,
unnecessary explanations. Their verbal behavior became more specific
than when the technical repertoire was, at least overtly, nonexistent.
This change in total frequency of technical terms used was substan-
tiated by the concurrent change in the frequency of different techni-
cal terms used.
Finally, the desirability of increased accuracy in using technical terms was never questioned. This may have resulted from the combined effects of correction during feedback training and of modeling from the segments of tape carrying accurate usage.

Conclusions

Insofar as the techniques used in this study may be valid, the following conclusions seem to be justified.

The changes recorded for the morning and afternoon groups are not claimed as the result of time alone. The replication across subjects ruled out that possibility. To say, however, that changes were solely the function of the researcher's feedback would be to oversimplify a complex behavior change. Although feedback was the main experimental tool in changing the therapy supervisors' verbal repertoire, several factors might deserve some credit in affecting these changes. For example, most therapy supervisors (perhaps all of them) were taking classes in psychology or special education. Simple class participation, such as listening to lecturers and to other students, may have contributed to some of the changes. Then, one might ask, why did the afternoon group not change before feedback training was introduced? Could it be that feedback training had its greater impact on the therapy supervisors' overt verbal behavior only?

To say that the therapy supervisors' repertoire did not change before feedback training would be a mistake. The most acceptable conclusion is that feedback training considerably changed the overt
verbal behavior of the therapy supervisors. Whether or not these considerable changes in overt verbal behavior were also representative of similar additions to their covert verbal repertoires was not something the researcher intended to prove.

Another curious question can be raised: Did the retarded children themselves have any benefit as the result of some of the changes in the therapy supervisors' overt verbal behavior? The answer would have to be "yes." With improved communication skills, the therapy supervisors were able to give more specific directions to the therapists working with the children. With increased frequency of evaluation feedback and more suggestions for improving their sessions, the therapists were expected to be more efficient when working with the children. Nevertheless, the changes in the behavior of severely retarded children are rather slow. To evaluate changes in their behaviors and to correlate those changes with the verbal communicative skills of the therapy supervisors is a topic for future studies.

In addition, there were complex factors influencing the severely retarded children's behaviors: medication; limited exposure in the social community; and often the lack of curriculum materials proper for these children.

Some other implications of this study were of a major interest to the researcher. First of all, the results obtained stressed the desirability of researcher's objectivity in selecting target behaviors. Second, the conclusiveness of the data in Figures 1 to 5 justified the training program used and the conclusiveness of the data justified the experimental design used, as well.
Recommendations

The applicability of this or some similar feedback-based program at other sites with other types of staff and the aiming of it at still other target behaviors was considered. For instance, in the public schools, a principal might take advantage of videotapes plus cooperation of teachers to improve common problems in the classroom. Once a week, or monthly, segments of videotaped classroom behaviors of teachers and pupils could be discussed in a group situation. The principal or school psychologist could serve as a mediator in the discussions. During these discussions, alternative models for classroom management and contingencies could be established.

Other applications for this training procedure would be in the field of business (shaping verbal behavior in salesmen), in the armed forces (teaching a code language to special agents), and in colleges (teaching teachers to increase the frequency and variety of attractive examples within subject matter).

Finally, the application of systematic training programs may be a very rewarding experience to the implementer, whether he or she is a school administrator, a psychologist, an industrial supervisor, or a personnel director. Quite often, the results obtained in such training programs may be predicted, depending on the social and administrative skills of the implementer. Also, under proper environmental conditions, the implementer may hold an increased probability of obtaining positive results if he closely evaluates the progress accomplished, adding to his program selected findings of current
research. Of course, there will always be some more general inputs in staff training programs—among others; personal commitment, philosophical orientation, styles of leadership, and, naturally, the individual's creativity.
REFERENCES


APPENDIX
COMMON TECHNICAL TERMS USED IN PSYCHOLOGY AND IN SPECIAL EDUCATION*

1. Active Assistive Movement: child assisting with the movements being taught.

2. Accidental Reinforcement (see REINFORCEMENT, ACCIDENTAL).


5. Anoxia: inadequate oxygen supply with consequent disturbance in body functions.

6. Antecedent Event (see EVENT ANTECEDENT).

7. Anxiety: concern; fear; mental anguish; worry.


10. Assessment: analysis; evaluation.

11. Associated Reactions: stiffens in spastic arms and legs resulting from effort.

12. Asymmetrical: one side of body different from the other.

13. Ataxia: no balance; jerky, lack of muscle coordination.


15. Automatic Movement: exhibiting startle reflex; lifting head while prone in suspension (may be able to protect self).

*Part of this list was provided by Mrs. Coby Backoff, O.T.R., at the Kalamazoo Program for the Severely Mentally Impaired. The other part was provided by Mr. Alexandre Nucci, then a graduate student at Western Michigan University, who conducted a thesis project on the meaning and usages of technical terms.
16. Aversion Therapy (see THERAPY, AVERSION).
17. Aversion, Imagery (see IMAGERY, AVERSIVE).
18. Aversive Stimulus (see STIMULUS, AVERSIVE).
19. Avoidance Behavior (see BEHAVIOR, AVOIDANCE).
20. Avoidance Learning (see LEARNING, AVOIDANCE).
22. Baseline, Multiple: taken on various dependent variables; also a form of experimental design.
23. Behavior, Avoidance: behavior emitted to avoid a stimulus or event.
24. Behavior, Covert: not noticeable by observer unless indirectly measured.
26. Behavior, Incompatible: behavior which interferes with the occurrence of other behaviors.
27. Behavior, Modification (see MODIFICATION, BEHAVIOR): any means used to change overt or covert behaviors, e.g., surgery, psychotherapy, aversion, flooding, etc.
30. Behavior, Target: the behavior to be changed or studied.
31. Behavior, Therapy (see MODIFICATION, BEHAVIOR).
32. Behavioral Analysis (see ANALYSIS, BEHAVIORAL).
33. Behavioral Model (see MODEL, BEHAVIORAL).
34. Bobath (treatment): a neurologist and registered physical therapist (R.P.T.) from England who developed techniques of working with cerebral palsy patients who suffered from hypertonicity of muscles.
35. Brain Stem Level: child may exhibit involuntary but specific arm movement patterns when turning, flexing, or extending head; legs may involuntarily flex or extend when supported by therapists.
36. Cerebral Palsy: posture and movement disorder resulting from brain damage.

37. Chain: orderly sequence of behavior.

38. Classical Conditioning (see CONDITIONING, RESPONDENT).


40. Community Mental Health (see MENTAL HEALTH, COMMUNITY).

41. Conditioned Reinforcer (see REINFORCER, CONDITIONED).

42. Conditioned Response (see RESPONSE, CONDITIONED).

43. Conditioned Stimulus (see STIMULUS, CONDITIONED).

44. Conditioning, Classical (see CONDITIONING RESPONDENT).

45. Conditioning, Instrumental (see CONDITIONING, OPERANT).

46. Conditioning, Operant: strengthening of behavior through the use of consequences.

47. Conditioning, Pavlovian (see CONDITIONING, RESPONDENT).


49. Consequence: stimulus or event which follows a response.

50. Consequent Event (see EVENT, CONSEQUENTIAL).


52. Contingency Contract: an agreement between two parties, e.g., "As soon as you finish your task, you may take a break."

53. Contract Contingency (see CONTINGENCY CONTRACT).

54. Contraction: temporary shortening or tightening of a muscle.

55. Contracture: permanently tight muscles and joints.

56. Control, Environmental: control of certain aspects of the environment having direct impact on behavior.

57. Cortical Level: able to sit, kneel, hop, and walk.

58. Coverant (see COVERT): a covert operant response.
59. Counter Conditioning: teaching of responses which inhibit other responses, e.g., teaching a person how to relax in the presence of stimuli which usually generates anxiety.

60. Covert Behavior (see BEHAVIOR, COVERT).

61. Covert Sensitization (see IMAGERY, AVERSIVE).

62. Cytomegalic Inclusion Disease: cell enlargement or tumor usually resulting in brain damage.

63. Delta Stimulus (see STIMULUS DELTA).

64. Deprivation: state of organism exposed to long periods without water, food, sex, etc.

65. Desensitization, Systematic: elimination of phobias by presenting phobia generating stimuli when the individual is deeply relaxed.

66. Diagnosis: statement concerning the cause of a disease or condition of an organism.

67. Diagonal: cross pattern; right arm and left leg moving simultaneously and left arm and right leg moving together.

68. Differential Reinforcement (see REINFORCEMENT, DIFFERENTIAL).

69. Diplegia: two arms or legs affected, e.g., spastic diplegia means stiff legs.

70. Discrimination (training): establishment of certain responses in the presence of defined stimuli (usually labeled SD).

71. Discriminative Stimulus (see STIMULUS, DISCRIMINATION).

72. Dystocia: impaired labor referring to excessive size of embryo or its abnormal position within the uterus.

73. Effect, Law of (Thorndike's): consequences tend to increase or decrease response strength depending on whether they are satisfactory or unsatisfactory to the behaving organism.

74. Eliciting Stimulus (see STIMULUS, ELICITING).

75. Encephalatrophy: atrophy of the brain.

76. Environmental Control (see CONTROL, ENVIRONMENTAL).

77. Equilibrium Reactions: balance reactions.
78. Escape Behavior (see BEHAVIOR, ESCAPE).
79. Escape Learning (see LEARNING, ESCAPE).
80. Event, Antecedent: the one which precedes a response.
81. Event Consequent: the one which follows the response.
82. Extinction: gradual decrease in response in the absence of reinforcing consequences.
83. Facilitation: making it possible for the child to more.
84. Fading: gradual change in stimulus intensity.
85. Feedback: evaluation, revision, of an accomplished task to indicate to the performer his level of mastery.
86. Flacid: muscle tone lost or muscles limp.
87. Flooding: eliminating anxiety or phobia by intensive exposure to feared objects or situations.
88. Gait: manner of walking.
89. Generalization: after responses have been mastered in therapy, their occurrence outside therapy is called generalization.
90. Generalized Reinforcer (see REINFORCER, GENERALIZED).
91. Goniometer: instrument used in measuring joint range of motion.
92. Habilitation: developing individual skills and abilities, those which have never been learned and developed.
93. Hashimoto's Disease: rare inflammatory disease of thyroid gland resulting in a smooth enlargement of the gland and degeneration of tissues.
94. Head Control: ability to control position of head voluntarily.
95. Hematoma: hemorrhage under the skin with the formation of a blood clot.
96. Hemiplegia: one side of body affected.
97. Hemolytic: anemia caused by destruction of red blood cells.
98. Hierarchy Stimulus (see STIMULUS, HIERARCHY).
99. Homolateral: limbs or upper arms moving together on the same side.
100. Homologous: lower or upper arms moving together.


102. Imagery, Aversive: imagining and pairing aversive events concurrent with the presence of undesirable behaviors.

103. Imitation: responding in ways similar to a model.

104. Implosion Therapy (see THERAPY, IMPLOSION).

105. Incompatible Behavior (see BEHAVIOR, INCOMPATIBLE).

106. Infarction: a condition in which an area of tissue is deprived of its blood supply because of a clot within an artery, e.g., myocardial infarction is inadequate blood supply to the heart.

107. Inhibition: positions and movements that stop muscle tightness.

108. Inhibition, Reciprocal (see COUNTER CONDITIONING).

109. Instrumental Conditioning (see CONDITIONING, OPERANT).

110. Intention, Paradoxical (see PARADOXICAL INTENTION).

111. Intermittent Reinforcement (see REINFORCEMENT, INTERMITTENT).

112. Intervention Plan: a plan designed to change behavior.

113. Intracranial: within the skull.

114. Involuntary movements: unintended movements, e.g., uncontrolled muscle twitching.

115. Law of Effect (see EFFECT, LAW OF).

116. Learning, Avoidance: organism makes the response before the primary aversive stimulus occurs and thus avoids it.

117. Learning, Escape: organism makes a response in the presence of an aversive stimulus and escapes from it.

118. Learning, Vicarious: behavior is learned through observation; vicarious learning is controlled by intellectual capabilities, complexity of the organism, and by its needs to survive.

119. Medical Model (see MODEL, MEDICAL).

120. Mental Health, Community: agencies, acts, organizations.

121. Microcephaly: abnormally small head resulting from premature hardening of the skull.
122. Midbrain Level: individual may be able to hold head upright.

123. Model: example; demonstration.

124. Model, Behavioral: explains behavior as learned and maintained by antecedent and consequent events.

125. Model, Medical: explains behavior as being caused by diseases, underlying causes.

126. Modeling: teaching with a model.

127. Modification, Behavior: generally, any means of changing behavior (chemotherapy, psychotherapy, surgery, etc.); also used with specific references to operant methodology.

128. Modification, Self (see SELF-MODIFICATION).

129. Molding: framing; shaping with exact structure as that of a model.

130. Motor patterns: ways in which the body limbs work together to make movement possible.

131. Multiple Baseline (see BASELINE, MULTIPLE).

132. Negative Reinforcement (see REINFORCEMENT, NEGATIVE).

133. Negative Reinfocer (see REINFORCER, NEGATIVE).


136. Occupational Therapy: medically-directed treatment of physically and/or mentally disabled by means of constructive activities to promote restoration of useful functions.

137. Operant Behavior (see BEHAVIOR, OPERANT).

138. Operant Conditioning (see CONDITIONING, OPERANT).

139. Operant Reinforcement (see REINFORCEMENT, OPERANT).

140. Orthoses: splint or brace to assist in performance or function of extremity or joint.

141. Paradoxical Intention: intensive anxiety evocation intended to change patient's attitude towards the problem.
142. Paraplegia: both legs affected or paralyzed.

143. Passive Movement: that which is done to individual without his help or cooperation.

144. Pavlovian Conditioning (see CONDITIONING, RESPONDENT).

145. Perseveration: unnecessary repetition of movement and/or speech.

146. Perinatal: referring to the time just preceding, during, or after birth.

147. Phobia: excessive fear of objects, places, or things.

148. Physical Therapy: a program of strengthening or retraining motor skills by treating a disease with other means than drugs; such as, massage, regulated exercise, water, light, air, and electricity.

149. Plan, Intervention (see INTERVENTION PLAN).

150. Point System: similar to token system; points are used to reward good performance or behavior; at a later time, points are exchanged for other rewards.

151. Polygenetic: that which pertains to many genes.

152. Porencephaly: presence of abnormal cavities in the cerebral portion of the brain.

153. Positive Reinforcement (see REINFORCEMENT, POSITIVE).

154. Positive Reinforcer (see REINFORCER, POSITIVE).

155. Posture: position from which the individual starts moving.

156. Prehension: the act of grasping; as a newborn child will close his fingers around an object placed in his hands.

157. Premack Principle: a high probability behavior may be used as a reinforcer for a low probability behavior.

158. Primary Reinforcer (see REINFORCER, PRIMARY).

159. Procedure, Reversal: termination of treatment and return to baseline conditions.

160. Prompts: verbal and physical stimuli which facilitate the occurrence of a response.
161. Prosthesis: artificial limb; artificial body part.

162. Punishment: form of consequence used to decrease the future probability of a response to reoccur.

163. Quadriplegia: all four extremities affected, e.g., a paralyzed person from neck to toe is a quadriplegic.

164. Quadruped: pertaining to the number four.

165. Reciprocal Inhibition (see COUNTER CONDITIONING).

166. Reinforcement: form of consequence used to increase the future probability of a response to reoccur.

167. Reinforcement, Accidental: consequence was not planned or intended.

168. Reinforcement, Conditioned: form of consequence which requires the pairing of a reinforcing stimulus with a neutral stimulus, then the neutral stimulus is used in the process of reinforcement.


170. Reinforcement, Intermittent: inconsistent schedule of reinforcement; after a given response, it may or may not occur depending on "chance."

171. Reinforcement, Negative: form of reinforcement which consists of removing an aversive stimulus after a target behavior occurs.

172. Reinforcement, Operant (see REINFORCEMENT, POSITIVE).

173. Reinforcement, Positive: procedure to increase response frequency by presenting reinforcing stimuli or event contingent upon a response.

174. Reinforcement, Schedules of: different frequencies of delivering reinforcement.

175. Reinforcement, Social: praise; smiles.

176. Reinforcer: stimulus or event which increases the frequency of a response when presented contingently following that response.

177. Reinforcer, Conditioned: reinforcer which acquires its property after being paired with an unconditioned reinforcer.

178. Reinforcer, Generalized: reinforcer of mult$values to the individual whose responses are being reinforced.
179. Reinforcer, Negative: stimulus or event (usually aversive) which when removed contingently upon a response, increases the future probability of that response.

180. Reinforcer, Positive: stimulus or event which increases the probability of behaviors when presented immediately after their occurrence.

181. Reinforcer, Primary: carries reinforcing property without acquiring it from other stimuli.

182. Relaxation: state of an organism.

183. Reliability: dependability; assuredness as to the definition of a behavior being recorded and the accuracy of the recording technique.

184. Replication Therapy (see THERAPY, REPLICATION).

185. Respondent Behavior (see BEHAVIOR, RESPONDENT).

186. Respondent, Conditioning (see CONDITIONING, RESPONDENT).

187. Response: change in the behaving organism following internal or external variations, associations, etc.

188. Response, Conditioned: response that occurs in the presence of a given stimulus.

189. Response Cost: removal of reinforcer previously given following undesirable behaviors or incorrect responses.

190. Response, Unconditioned: not established in the presence of any specific stimulus or condition.

191. Reversal Procedure (see PROCEDURE, REVERSAL).

192. Righting: ability to put head and body right when positions are abnormal or uncomfortable.

193. Rigidity: very stiff movements and posture.

194. Rotation: turning over, e.g., inward rotation is bringing the shoulders forward.

195. Satiation: reinforcer looses its value after the organism has had enough of it.

196. Schedules of Reinforcement (see REINFORCEMENT, SCHEDULES OF).

197. Sclerosis: hardening of tissues with deposits of fibrous tissue to replace the original structure.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
198. Segmental rolling: trunk rotation; hips roll over, then shoulders, and vice versa.

199. Self-control: individual emits a response which controls other of his own responses.

200. Self-modification: individual consequation of his own behavior in a systematic way as to control future reoccurrences of that same behavior.

201. Sensation: feeling.

202. Sensitization, Covert (see IMAGERY, AVERSIVE).

203. Shaping: teaching technique which concentrates on small or easy steps toward a more complex response topography.

204. Skill: ability to do task.

205. Social Reinforcement (see REINFORCEMENT, SOCIAL).

206. Spasm: sudden tightness of muscles.

207. Spasticity: stiffness.

208. Spinal Level: child may exhibit bent arms and legs or extreme extension of extremities and head.

209. Stenosis: constriction or narrowing of a passageway or opening.

210. Stimulation: making child able to move.

211. Stimulus, Aversive: one which is not desired by the organism.

212. Stimulus, Conditioned: one which carries properties of other stimulus with which it is paired.

213. Stimulus, Delta: stimulus in the presence of which a response will not be reinforced.

214. Stimulus, Discriminative: stimulus in the presence of which a response will be reinforced.

215. Stimulus, Eliciting: stimulus which will evoke the occurrence of a given response.

216. Stimulus, Hierarchy: order in which stimuli are presented in a systematic desensitization therapeutic procedure.

217. Stimulus, Unconditioned: one which carries its own properties.
218. Strabismus: cross-eye or other muscle defects resulting in lack of alignment of the eye.

219. Subdural: beneath the dura (membrane covering the brain and spinal cord).

220. Superstition: belief or practice resulting from ignorance.

221. Symmetrical: both sides equal.

222. Symptom: indication of something else.

223. Systematic Desensitization (see DESENSITIZATION, SYSTEMATIC).

224. Tay-Sachs Disease: progressive fatal disease prevalent to the Jewish population occurring in infants and associated with blindness and deterioration of the brain.

225. Therapy, Aversion: presenting, in the contact of an undesirable response, an aversive stimulus which will force a strong avoidance response.

226. Therapy, Implosion: presenting the most intense level of fear arousing situation. (This is based on Pavlovian extinction principle: presenting the conditioned stimulus without the unconditioned stimulus.)

227. Therapy, Replication: by replicating problematic situations in the clinical setting, the therapist helps the patient to discover and try out new behaviors to improve his effectiveness.

228. Time-out: removing the opportunity for receiving positive reinforcement.

229. Token Menu: list of activities or goodies which can be exchanged by a specified number of tokens.

230. Token System: system under which symbolic reinforcers, e.g., poken chips, are given to and retained by an individual who may later exchange them for activities or goodies.

231. Tone: firmness of muscles.

232. Tonic neck reflex: when turning of the head causes one arm to straighten and stiffen and the other to bend.

233. Toxemia: condition characterized by poison products (toxins) in the blood resulting in illness or retardation.

234. Trunk: body.
235. Unconditioned Response (see RESPONSE, UNCONDITIONED).
237. Unconditioned Stimulus (see STIMULUS, UNCONDITIONED).
238. Vicarious Learning (see LEARNING, VICARIOUS).
## DATA COMPUTATION SHEET

<table>
<thead>
<tr>
<th>Therapy Supervisor</th>
<th>Duration of Segments of Tape</th>
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<tr>
<td>Trainer</td>
<td>Data Evaluation Session</td>
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<td>Regular</td>
<td>Reliability</td>
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### TECHNICAL TERMS USED

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**COMPUTATIONS**

1. Frequency of technical terms per minute = \( \frac{B + C}{\text{Duration of Evaluation in Minutes}} \)
2. Variety of different technical terms per minute = \( \frac{A}{\text{Duration of Evaluation}} \)
3. Percent accuracy = \( \frac{B x 100}{B + C} \)
4. Percent positive feedback = \( \frac{\text{Positive x 100}}{\text{Positive + Negative}} \)
5. Number of specific evaluation statements per minute = \( \frac{\text{Number of Specific Statements}}{\text{Duration of Evaluation Session}} \)

**IMPORTANT NOTES**

1. A technical term is any term, or the variation of any term, from the terminology list.
2. To obtain daily means for each group, add data of all individuals in that group and divide totals by the number of individuals in the group.