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USE OF FUNCTION AS A CONSEQUENCE IN  
TRAINING RECEPTIVE LABELING OF OBJECTS  
TO SEVERELY HANDICAPPED INDIVIDUALS

A Thesis

by

Lynn Vandiviere Winship

Submitted to the Graduate School

Appalachian State University

in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

August 1982

Major Department: Special Education

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## ABSTRACT

### USE OF FUNCTION AS A CONSEQUENCE IN TRAINING RECEPTIVE LABELING OF OBJECTS

TO SEVERELY HANDICAPPED INDIVIDUALS (August 1982)

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Receptive language is an essential component of the behavioral repertoires of severely handicapped individuals. Effective training in receptive language skills is a viable and necessary part of educational programming for severely handicapped individuals. This study compared two methods of training receptive labeling of objects to two severely handicapped subjects. The first method, label only, was composed of standard operant procedures. In the second method, function plus label, standard operant procedures were used, but in addition, the subjects were allowed to perform the function of the object as a consequence of a correct response. Results indicated that the function plus label method was more effective than the label only method in training receptive labeling of objects to the severely handicapped participants in this study.



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My husband, David, not only edited and typed this manuscript, but he provided all the encouragement I needed to keep going up and down the mountain.

## DEDICATION

To Petey and Doug -- excellent work, men!

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## CHAPTER I

### INTRODUCTION

The development of language and communication skills is one of the most basic and pressing concerns of educators of handicapped individuals (York & Edgar, 1979). Existence of language in an individual is a crucial behavior because the possession of language makes individuals more normal and thus contributes to their acceptance by society (Lovaas, 1977). Deficits in language and communication skills have been cited frequently by both parents and educators of handicapped persons as being major areas of concern (Soltzman & Rieke, 1976). These same educators and parents advocated the development of language and communication skills in order that they may be included in the behavioral repertoires of their handicapped students and children (Miller & Yoder, 1974). Guess, Sailor, and Baer (1978) noted that any language training program is an important one because of the value of language to a handicapped person.

#### Language and the Severely Handicapped

The severity of language and communication problems among severely handicapped persons cannot be overemphasized as a major area of concern (Guess, Sailor, Keogh & Baer, 1976). Severely handicapped individuals usually have profound delays in language production and significantly inadequate abilities to understand others. Effects of these deficiencies on the quality of life and survival of the severely

handicapped person are great in that deficits in communication can lead to behavioral problems such as tantrums and self-injurious behavior.

### Receptive and Expressive Language

Language abilities are divided into the two major categories of expressive and receptive language (Haring, 1979). Expressive language is the production of words, as in vocal speech, or production of signs or gestures, as in non-vocal communication. Receptive language involves comprehension, both of the spoken word and/or signs or gestures. Some cognitive understanding of the arrangement of the individual's environment is also an essential component of language abilities (Horrocks & Hollis, 1979).

Schiefelbusch and Lloyd (1974) reported that some controversy exists surrounding whether receptive skills should be trained before expressive skills. Attacks on the concept of comprehension preceding production come from researchers in both behavioral and cognitive psychology (Siegel & Spradlin, 1978). The behavioral viewpoint is based on the concept that since different stimuli and responses are involved in receptive and expressive language, the two can and do develop independently. Cognitive researchers postulate that reception and expression are reflections of different underlying linguistic and cognitive competencies, and as a result, one does not necessarily precede the other.

Bloom (1974) also indicated that questions have begun to emerge as to whether reception necessarily precedes production. Furthermore, the relationship between expressive and receptive language changes as an individual develops cognitively and linguistically. Some kind of



comprehension of a language behavior has to occur before an individual is able to use or produce that language behavior. In his presentation of the controversy, Ingram (1974) stressed that reception definitely precedes production and that the first words produced must be understood to some extent.

Guess, Sailor, and Baer (1976) observed that the relationship between receptive and productive language is a subject of controversy, but that both should be trained, either at the same time or sequentially. The authors cautioned, however, that educators should not expect that training in one will transfer automatically to the other without further training. Training in receptive language, while it does not necessarily lead to generalization in the expressive mode, may facilitate more rapid acquisition of expressive skills (Harris, 1975).

#### Receptive Language Training

Siegel and Spradlin (1978) agreed that both expressive and receptive language should be trained, but that receptive language is an important skill in its own right. Receptive competency is a functional language skill, in that the ability to understand others provides reinforcers from the environment, including social group reinforcers. The receptive mode should be utilized and developed to its fullest extent because it provides an avenue for the reception of information and direction to the handicapped individual (Hollis & Carrier, 1978).

Cromer (1974) indicated that the process of developing receptive language skills is complex. Many language programs, both expressive

and receptive, use operant procedures as part of the instructional methods (Goetz, Schuler, & Sailor, 1979). However, training language skills strictly through the use of operant procedures can be time consuming and frustrating for both the trainer and the handicapped person. Thus, Goetz et al. (1979) suggested that the receptive training of an object which appears in the handicapped individual's natural environment is more functional and an object of this type is more easily trained than an object which is chosen arbitrarily. The rationale behind this assumption is that objects occurring naturally in the environment provide more opportunities for interaction on the part of the handicapped individual. It is this interaction which potentially facilitates receptive learning.

Bricker and Bricker (1974) observed that the manipulation of different objects in different ways is a receptive language training step. They further asserted that the use of a functional motor movement in combination with established operant procedures may facilitate the acquisition of receptive vocabulary. Additionally, object labels become more discriminative when embedded in differential action sequences (Goetz, Schuler, & Sailor, 1979).

#### Environment for Training

An additional concern of those training receptive language is the environment in which the training takes place (Sailor, Guess, Goetz, Schuler, Utley & Baldwin, 1980). Soltzman and Rieke (1976) stated that receptive language goals should be functional to the handicapped individual, and that these goals should be trained in the classroom. Harris (1975) agreed that receptive language training should be

undertaken in a group classroom situation, specifically to facilitate generalization of receptive language to everyday learning situations.

### Synthesis

Development of language and communication skills in severely handicapped individuals is of primary concern to researchers, educators, and parents. Although some controversy exists surrounding the traditional concept of receptive language necessarily preceding expressive language, receptive training is viewed as a viable and important component of the language curriculum for severely handicapped individuals. Receptive language training programs generally utilize operant procedures, although the combination of operant procedures with actions on the part of the handicapped learner has been suggested by authorities in language training. Additionally, the classroom has been identified as the ideal environment for training functional receptive language skills which will generalize to everyday learning situations.

### Present Study

Based on the preceding information, the present study attempted to demonstrate the relative effectiveness of two different methods of receptive language training. The first method, label only, was composed of standard operant procedures. That is, (a) the stimulus was presented, (b) the subject emitted a response, and (c) reinforcement was given in the presence of a correct response, or a correction procedure was applied in the presence of an incorrect response. The second method, function plus label, combined a specific action which was tied to a given stimulus with a receptive object label. Objects chosen for receptive training were objects which

occurred naturally in the environments of the subjects who participated in the study. Objects were chosen on the basis of the subjects' needs and on the basis of their functionality to the subjects. The classroom provided the training environment for the study. The research question investigated by this study was: Which training method, label only or function plus label, is more effective when used in training receptive labeling of objects to severely handicapped individuals in a classroom setting?

It was hypothesized that the function plus label method would prove more effective in training receptive labeling of objects to the severely handicapped subjects who participated in the study. The combination of a specific action, in this case the function of the object being receptively trained, and the verbalized label of the object should effectuate a greater level of correct responding on the part of the subjects.

### Summary

Training in receptive language skills is an important part of the language training received by severely handicapped individuals. The combination of operant procedures and specific actions on the part of the learner is viewed as an effective training technique. The present study examined this concept through the comparison of the label only method and the function plus label method of training receptive labeling of objects.



## CHAPTER II

### REVIEW OF THE LITERATURE

There is a need for receptive language training of severely handicapped individuals (Guess, Sailor, & Baer, 1976; Harris, 1975; Siegel & Spradlin, 1978; Hollis & Carrier, 1978). Although receptive language training may not transfer directly to expressive language, it is generally accepted that both should be trained. While operant procedures are generally utilized in receptive language training programs, combining these procedures with specific actions is often suggested to facilitate acquisition of receptive language.

This review examines various aspects of selected receptive language research studies reported in the literature. In addition, studies which have identified the importance of combining specific actions with operant procedures in training receptive language are also examined.

#### Transfer of Reception to Production

Bucher and Keller (1981) examined various aspects of receptive language training which may affect subsequent expressive language acquisition. Structural or topographical characteristics of stimulus items, degree of original training, context in which test trials are given, and familiarity of response items were investigated. A match-to-sample receptive training method was utilized, with positive

reinforcement given for correct responses, and correction procedures applied for incorrect responses. Results indicated that receptive to productive transfer was enhanced when dissimilar short words were used in training, when receptive practice was intermixed with occasions for productive performance, and when receptive performance was trained to a high criterion.

#### Successive vs. Concurrent Training

Waldo, Guess, and Flanagan (1982) compared the effects of serial and concurrent training on acquisition of receptive labels of objects, and the extent to which each procedure enhanced the ability of three severely handicapped subjects to recognize and identify learned items when these were mixed with untrained items. Operant procedures were used to train nonsense consonant/vowel/consonant labels. Nonsense labels were trained in order to insure that the training stimuli were new to the subjects, and to insure that labels were not being trained outside the experimental setting. Serial presentation enabled the subject to reach criterion in fewer trials, while concurrent presentation led to a higher percent correct responding in subsequent probes where learned items were mixed with untrained items.

In a related study, it was determined that moderately handicapped subjects reached acquisition more rapidly with serial presentation of stimulus items (Cuvo, Klevans, Borakave, Borakave, L. S., Van Landuyt, & Lutzker, 1980). In addition, concurrent presentation of stimulus items yielded higher maintenance levels with the subjects.

### Training with Real Objects

Wolf and McAlonie (1977) reported the results of a receptive language training program in which real objects were used to train receptive labeling of objects to moderately retarded subjects. Effects of this receptive language training on expressive language gains were also investigated. Experimenters trained subjects to identify the labels of the objects by first presenting the object, then verbalizing the label of the object, and requesting a receptive response from the subject. Results indicated that the use of real objects facilitated receptive language gains, but consequential gains in expressive language were not clearly evidenced.

In another study, Welch and Pear (1980) compared receptive language training with picture cards, photographs, and real objects, and assessed generalization to real objects in the natural environment. Each severely handicapped subject in the experiment was trained with each stimulus mode sequentially, then intrasubject replication was conducted. The subjects were trained to a prespecified criterion with each stimulus mode, and tests for generalization were conducted at the end of each phase of the experiment. These tests for generalization were conducted across settings, or across modes and settings. Results of the experiment revealed that significantly greater generalization to objects in the natural environment occurred when subjects were trained with real objects.

### Use of Manual Signs

Kohl, Karlan, and Heal (1979) investigated the effects of pairing manual signs and verbal labeling on receptive language acquisition. Specifically, the question of whether the acquisition of instruction-following behavior is facilitated by pairing verbal cues with manual signs was investigated. Manual signs were presented which (a) corresponded with words in the verbal cues on a one-to-one basis, (b) corresponded only to key elements in the verbal cues, or (c) only verbal cues were presented. Findings indicated that the pairing of manual signs with verbal cues greatly facilitated the acquisition of instruction-following behavior in the severely handicapped subjects. Differences between complete and partial signs were not significantly evidenced. It was speculated that sign iconicity (the degree to which the action of the sign resembled the action of the instruction) may have been a salient factor in the effectiveness of pairing signs with verbal labels.

Booth (1979) described a procedure for training receptive language object identification in severely handicapped individuals which also pairs manual signs with verbal labels. In this study, subjects were required to provide a receptive label to a real object in response to a verbal cue which was paired with a manual sign. The author suggested that this procedure required that the manual sign be faded as the subjects gained acquisition of the receptive labels of objects. Booth also asserted that it is important for the severely handicapped individual to comprehend the function of the object being trained in order to facilitate receptive labeling of objects.



### Stimulus-Specific Reinforcement

In a study designed to investigate the use of stimulus-specific reinforcement, Saunders and Sailor (1979) examined the effects of specific, non-specific, and variable positive reinforcement on receptive labeling of objects by severely handicapped individuals. Stimulus specific reinforcement was defined as binding a given reinforcer to a stimulus object. The specific reinforcement condition consisted of allowing the subject to play with the receptively identified object. The non-specific reinforcement condition consisted of supplying the subject with an arbitrarily chosen toy upon a correct receptive response and allowing the subject to play with the toy. In the variable reinforcement condition, the subject was provided with either the specific or non-specific reinforcer for a correct receptive response on a predetermined random basis. Specific positive reinforcement produced higher percentages of correct responding than either the non-specific or variable conditions, even when the toys used in the non-specific condition were high preference toys for the subjects. It was suggested that this was due to the correlation between the receptive object labeled and allowing the subject to perform an action (toy play) with that object.

In a related study, Litt and Schreibman (1981) investigated the general relationship between reinforcer specificity and reinforcer salience. Effects of stimulus-specific, variable, and salient reinforcement on the acquisition of receptive labels by autistic children were compared. Reinforcer salience was defined as a preferred edible, and variable reinforcement consisted of supplying

the subject with one of two edibles of equal value to the subject for a correct receptive response. Through the use of operant training procedures, the authors determined that stimulus-specific reinforcement was more effective than either salient or variable reinforcement in reducing the time required to acquire receptive labeling of objects by the subjects in the study.

#### Motoric Actions and Receptive Language Training

Bricker and Bricker (1970) reported that a structured program using operant procedures for training receptive language labels of objects to severely handicapped subjects was more effective than an informal receptive training program. Additionally, the suggestion was made that teaching the subject to make a distinctive motor movement differentially in the presence of each object to be trained would provide a mediating operation that might facilitate learning (Bricker & Bricker, 1971). Bricker (1972) also stated that the ability to respond to the names of objects in the environment is an initial step in developing meaning in language.

#### Function Plus Label

Murphy, Steele, Gilligan, Yeow, and Spare (1977) described a study which endeavored to teach a receptive picture language to a severely handicapped subject. The subject was required to match a real object to a line drawing, and if he responded correctly, he was given the object and was allowed to perform its function. For example, if the subject correctly matched a comb to the picture of a comb, he was allowed to comb his hair. This procedure significantly

facilitated the acquisition of a receptive picture vocabulary for the previously untrainable subject involved in the study.

In a similar study, two different procedures designed to train receptive noun discrimination were compared (Halle & Stremel-Campbell, 1976). In the first condition, the severely handicapped subjects were required to give an object to the experimenter in response to its verbalized label. In the second condition, the subjects were required to perform the function of the object in response to its verbalized label. A match-to-sample task and time delay procedure were common to both conditions in the study. Although there were individual differences among the subjects in how quickly the noun discriminations were learned, the maintenance of the acquired noun discriminations was more enduring when the second condition was utilized. It was also suggested that initial receptive labeling of objects may be facilitated by allowing severely handicapped individuals to perform the specific functions of objects being trained.

In a study which provides the procedural basis for the present study, two methods of training receptive labeling of objects by four severely handicapped individuals were compared (Janssen & Guess, 1978). The first method, label only, required the subject to indicate the correct object in response to a verbal label. The second method, function plus label, also required the subject to indicate the correct object in response to its verbal label, but, in addition, the subject was shown the function of the object and allowed to perform the function as a consequence of a correct response.

Each subject involved in the study had received previous receptive training in object labeling, yet had progressed very little in prior training programs. The 12 stimulus items chosen for training were those which had likely not been included in any of the subjects' previous receptive language training. The study utilized a reversal research design, with the reversal demonstrated by training two of the subjects on label only, and two on function plus label, then vice versa for the reversal.

Results of the study indicated that the function plus label condition significantly facilitated the acquisition of receptive labeling of objects. Comparisons of label only and function plus label conditions to the baseline performances of the subjects showed that the function plus label condition was more effective than label only across subjects and trained objects. Janssen and Guess (1978) suggested that this procedure should be investigated by other researchers, and that utilization of function as a consequence in training receptive language skills may prove to be practicable for educators of severely handicapped persons.

### Summary

Skill in receptive language is an essential component in the behavioral repertoire of the severely handicapped individual. Studies have been conducted on different aspects of training receptive language including the transfer of reception to production, successive versus concurrent training, training with real objects, use of manual signs, stimulus-specific reinforcement, the pairing of motoric actions with verbal labels, and the use of function as a consequence of



receptive labeling. Although combining the function of an object with its verbal label in training receptive object labeling has been investigated infrequently, it is currently considered to be an effective facilitator in the acquisition of receptive labeling of objects by severely handicapped individuals. The present study utilizes several techniques which have proven operative in training receptive labeling of objects, including concurrent presentation of stimulus items, stimulus-specific reinforcement, and training with real objects. Specifically, however, the study is designed to investigate whether the combination of function plus label is effectual when training receptive labeling of objects to severely handicapped individuals.

## CHAPTER III

### METHODS

This study attempted to demonstrate the relative effectiveness of two different methods for training the receptive labeling of objects in a classroom learning situation. The receptive training methods which were compared in this research study were label only and function plus label.

Label only was defined for the purposes of this study as supplying the subject with the object name only as the training technique. For example, if the receptive label "hat" were being trained, the experimenter might say, "(Subject), show me hat." If the subject provided an incorrect response, the label of the object would be repeated and the subject would be required to provide the correct response on the basis of label information only. In contrast, function plus label includes not only supplying the subject with the object name, but also demonstrating the function of the object and allowing the subject to perform the function. As in the preceding example, the label "hat" would be provided and the function of putting the hat on one's head would also be demonstrated. The subject would be allowed to perform this function as an integral part of training.

### Subjects

Two residents of the Western Carolina Center in Morganton, N. C., served as subjects. Western Carolina Center is a residential treatment center for the mentally retarded, serving the western region of North Carolina.

Subject 1 was a severely retarded male with a chronological age of 29. His mental age was 18-36 months, as measured by the Callier-Azusa Scale. He was non-verbal, demonstrated some self-injurious behaviors, was very alert, was generally compliant, and possessed no known auditory or visual impairments. He attended to task only when he was constantly supervised.

Subject 2 was a severely retarded male with a chronological age of 22. His mental age was 18-29 months, as measured by the Learning Accomplishment Profile. He was non-verbal and demonstrated some self-stimulatory behaviors (rocking, hand flapping, swaying). He had a seizure disorder and was sometimes drowsy as a result of medication. He was generally compliant and possessed no known auditory or visual impairments. He attended to task well when given moderate supervision and reminders to return to his work.

### Setting

The study was conducted in classrooms #2 and #3 in Redwood School at Western Carolina Center. In each classroom there was one large table, several chairs, bathroom, sink, and a blackboard. The research was conducted during the regular educational training time assigned to the subjects. This time averaged three hours per weekday. The

subjects' regular teachers and fellow students were in the room during the research training.

### Materials

The materials used in the research were the real objects whose labels were receptively trained. These objects had not been included in the subjects' previous language training. The objects trained were determined on the basis of their functionality and on the basis of the subjects' needs as determined by their regular teachers. Descriptions of the objects and their functions are provided in Table I.

### Procedures

The conditions for the research were baseline, label only, and function plus label. Twelve objects, divided into four trios of three objects each, were receptively trained. Subject 2 received training on only nine objects due to time limitations. Baseline data was collected for each trio of objects. Baseline for each trio consisted of 15 trials per session, five trials for each object. During the baseline condition, the subject was seated at the large table, with the experimenter at his side. The three stimulus objects for the trio being trained were placed directly in front of the subject. The experimenter said, "(Subject), show me (object)." If the subject pointed to the correct object, an edible and social praise were given, and a plus (+) was recorded on the data sheet. If the subject pointed to an incorrect object, or did not respond at all, a minus (-) was recorded on the data sheet. The experimenter then changed the order of the stimulus objects and again said, "(Subject), show me (object),"



Table I. Description of trios of stimulus objects (S) and function response (R) definitions

<u>Trio # 1</u>	<u>Trio #3</u>
Stapler	Safety pin
S - filled stapler with a piece of paper inserted	S - open safety pin
R - push down on top of stapler	R - pick up and stick pointed end of pin into pincushion
Washcloth	Light switch
S - white washcloth	S - cardboard stand with wallplate switch attached
R - wipe table with washcloth	R - flick switch up and down
Scissors	Broom
S - pair of adult sized scissors	S - small whisk broom
R - pick up scissors and cut strip of paper	R - pick up broom and make sweeping motion on table
<u>Trio # 2</u>	<u>Trio #4</u>
Crayon	Book
S - red primary crayon which is lying on a piece of paper	S - picture book with large, thick pages
R - pick up crayon and make mark on paper	R - open book and turn two pages
Napkin	Lotion
S - paper napkin	S - plastic pump-type lotion bottle
R - pick up napkin and wipe mouth	R - put small amount of lotion on hands and rub in
Pitcher	Pillow
S - small plastic pitcher	S - small beanbag pillow
R - pick up pitcher and make pouring motion	R - pick up pillow and give to experimenter

naming another object in the trio. The baseline procedure for each trio was continued until each stimulus object was presented five times.

The label only condition consisted of 15 trials per session, five for each object in the trio being trained. During the label only condition, the subject was seated at the large table, with the experimenter seated at his side. The three stimulus objects for the trio being trained were placed directly in front of the subject. The experimenter said, "(Subject), show me (object)." If the subject pointed to the correct object, an edible and social praise were given and a plus (+) was recorded on the data sheet. If the subject pointed to an incorrect object or did not respond at all, a minus (-) was recorded on the data sheet.

An incorrect, or no response, was corrected by the experimenter who said again, "(Subject), show me (object)," and pointed to the named object. Then the experimenter said, "Now you point to (object)." If the subject then responded correctly, an edible and social praise were given. If the subject still responded incorrectly, or failed to respond, the experimenter said again, "(Subject), show me (object)," and moved the subject's hand and finger in order to point to the correct object. The experimenter did not supply an edible or social praise after this "put through," but moved immediately to the next trial. For this trial, the experimenter changed the order of the stimulus objects and said, "(Subject), show me (object)," and named another stimulus object. This procedure for label only continued until each of the stimulus objects in the trio was presented five times.

During the function plus label condition, the subject was again seated at the large table with the experimenter at his side. The function plus label consisted of 15 trials per session, five trials for each of the objects in the trio being trained. The three stimulus objects for the trio being trained were placed directly in front of the subject. The experimenter then said, "(Subject), show me (object)." If the subject responded correctly, an edible and social praise were given, and a plus (+) was recorded on the data sheet. In addition, following a correct response, the subject was shown the function of the object and was allowed to perform the function if he desired.

If the subject did not make a response, or responded incorrectly, a minus (-) was recorded on the data sheet, and the experimenter said, "This is the (object)," showing the correct object to the subject. The experimenter then performed the function of the object again, and said to the subject, "Now you do it." If the subject performed the correct function at this point, an edible and social praise were given. If the subject failed to perform the correct function or failed to respond, the experimenter put the subject through the correct function response, immediately changed the order of the stimulus objects, and moved to the next trial. These procedures for the function plus label condition continued until each of the stimulus objects in the trio being trained was presented five times.

### Reliability

Reliability data for each subject was taken by the subject's regular teacher. The reliability observer was seated outside the subject's line of vision, but was able to clearly see the subject's

responses. Measures of interobserver agreement were taken once for each baseline condition and once for each label only and function plus label condition. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying the quotient by 100 (Hersen & Barlow, 1976). Interobserver agreement was 100% for each subject in every condition.

### Research Design

A reversal design was used to compare acquisition percentages of two trios of objects in which function plus label was trained versus two trios of objects in which label only was trained (only one label only trio was trained to Subject 2). Thus, the design was an A-B-A-C reversal, with A being baseline, B being function plus label, and C being label only. Both conditions were compared to the baseline to determine which was more effective in training receptive labeling of objects.

Criteria for changing conditions were determined by monitoring the data initially. When the first baseline condition appeared to stabilize after nine sessions, the function plus label condition was implemented. The baseline conditions for each trio of objects thereafter were composed of nine sessions. When Subject 2 scored 80% correct on the eleventh session during the first training condition (function plus label), that condition ended for both subjects and the baseline condition for the second trio of objects began. Thereafter, each training condition consisted of eleven sessions.

Summary

Two different methods, label only and function plus label, were compared to attempt to determine their relative effectiveness in a classroom learning situation. The subjects in the experiment were two residents of Western Carolina Center. The research design was an A-B-A-C reversal across two subjects. The research was conducted in its entirety in a classroom learning situation.



## CHAPTER IV

### RESULTS

Two male residents of Western Carolina Center served as subjects in this study designed to compare the effects of the label only and function plus label methods of training receptive labeling of objects. Three or four trios of objects were trained and the subjects' individual performances in each condition were compared to the baseline for each trio of objects. Figures 1.0 and 2.0 are graphic representations of correct percentage scores achieved in each training session for each subject. Corresponding mean percentage correct scores are superimposed over the percentage graphs. Additionally, the subjects' individual performances in each condition were compared to the baseline for each individual object.

#### Comparison of Trios

For Subject 1 (Figure 1.0), the baseline performances for each trio showed a decreasing trend. For Trio 1, the mean percentage correct score in the baseline condition (A) was 28%. The mean percentage correct score in the subsequent function plus label condition (B) was 39%. This indicated an increase in correct performance of 11%. For Trio 2, the mean percentage correct score in the baseline condition (A) was 22%. The subsequent label only condition (C) mean percentage correct score was 29%. Thus, the

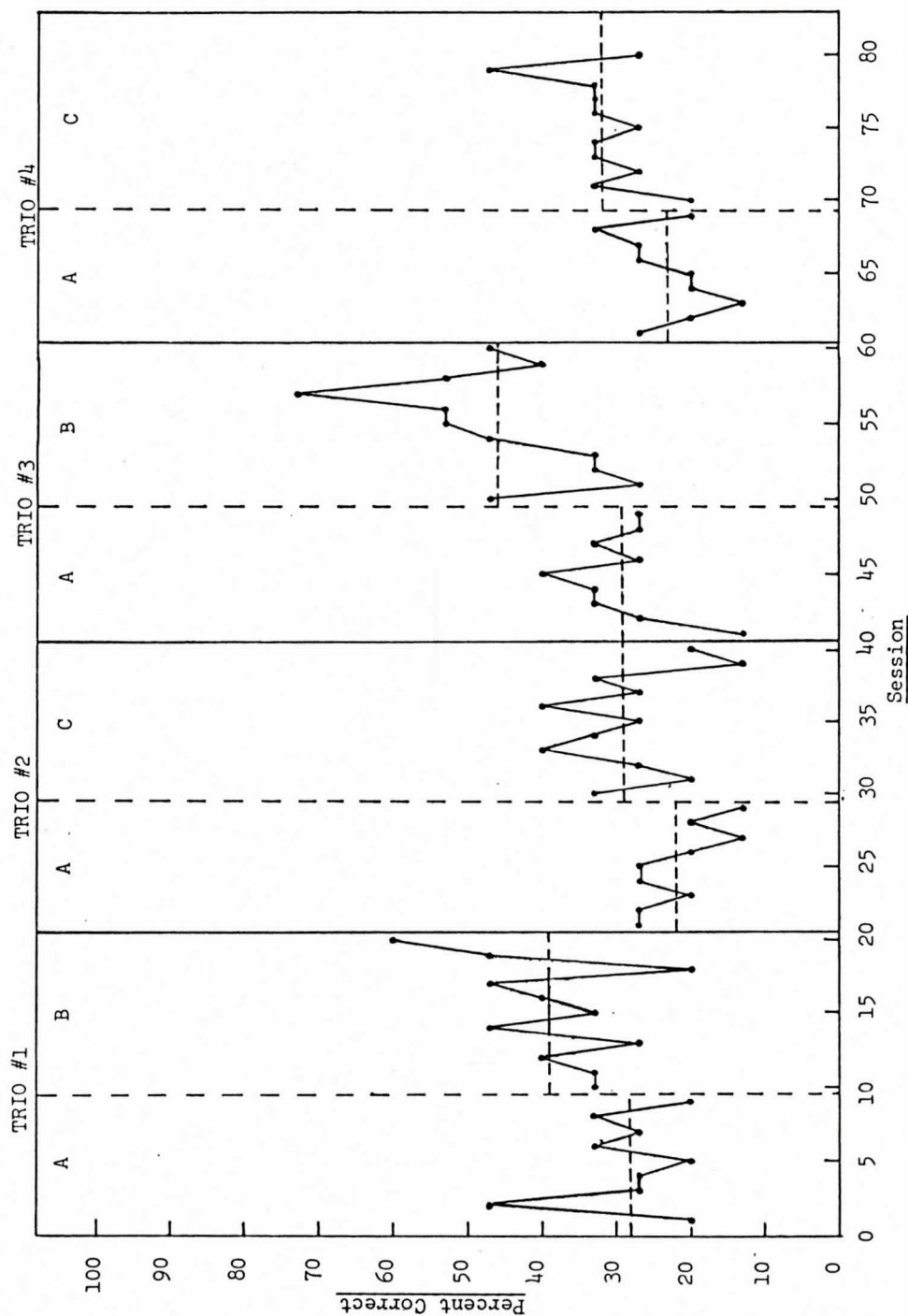


Figure 1.0. Session percentage correct scores across training conditions for Subject 1. Mean correct score lines are superimposed over the percent graphs.

increase in correct performance for Trio 2 was 7%. Trio 3 elicited a mean percentage correct score of 29% in the baseline condition (A) and 46% in the subsequent function plus label condition (B). Consequently, the increase in correct performance for Trio 3 was 17%. The mean percentage correct score in the baseline condition (A) for Trio 4 was 23% and the mean percentage correct score in the subsequent label only condition (C) was 32%. This represented an increase in correct performance of 9% for Subject 1 in Trio 4. An examination of the mean correct score lines in Figure 1.0 reveals that the mean percentage correct scores for both function plus label (B) conditions were higher than either of the mean percentage correct scores for the two label only (C) conditions.

For Subject 2 (Figure 2.0), the baseline conditions for each trio showed generally increasing trends. For Trio 1, the mean percentage correct score was 26% in the baseline condition (A) and 40% in the subsequent function plus label condition (B). This indicated a 14% increase in correct performance. Trio 2 elicited a mean percentage correct score of 27% in the baseline condition (A). The mean percentage correct score for this trio was 33% in the subsequent label only condition (C), representing a 6% increase in correct performance. For Trio 3, the mean percentage correct score was 22% in the baseline condition (A) and 53% in the subsequent function plus label condition (B), indicating an increase in correct performance of 31% for Subject 2 in Trio 3. An examination of the mean correct score lines in Figure 2.0 reveals that the mean percentage correct scores for both function plus



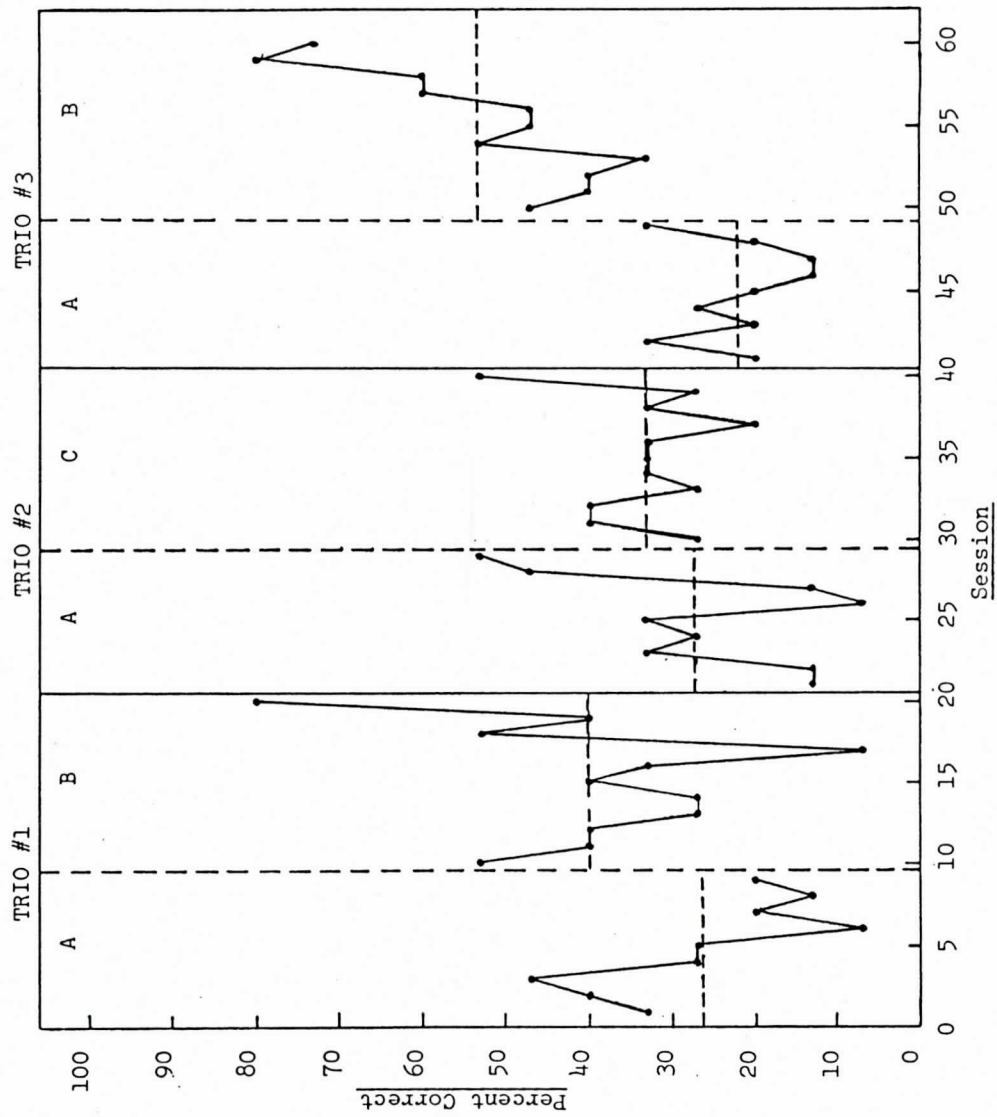


Figure 2.0. Session percentage correct scores across training conditions for Subject 2. Mean correct score lines are superimposed over the percent graphs.

label (B) conditions were higher than the mean percentage correct score for the single label only (C) condition.

#### Comparison of Objects

Tables II and III graphically represent comparisons of performances across objects for Subjects 1 and 2 respectively. First and last session scores (%) for each condition, range of scores (%) in each condition, and mean percentage correct scores for each condition are provided.

For Subject 1 (Table II), a comparison of first and last session scores (%) for each condition reveals that the label only condition for the objects "crayon," "napkin," and "pitcher" produced the only decreasing trends in a treatment condition, i. e., a condition other than baseline. An examination of the range of scores (%) for Subject 1 shows the variability of the subject's performances. For example, correct performance scores for the object "stapler" ranged from 0% to 60% in the baseline condition and from 0% to 100% in the subsequent function plus label condition.

An analysis of the mean percentage correct scores for Subject 1 in each condition indicated that 9 out of 12 objects elicited higher mean percentage correct scores in the treatment condition, as compared to the baseline condition for each object. For example, the mean percentage correct score for the object "safety pin" in the baseline condition was 27% and 55% in the subsequent function plus label condition, revealing a 28% increase in correct performance by Subject 1 for this object.

TABLE II  
PERFORMANCES ON INDIVIDUAL OBJECTS

SUBJECT 1

Object	Condition	First/Last Session Score (%)	Range of Scores (%)	Mean Percentage Correct
Washcloth	Baseline: Function + Label	20/ 0 : 20/20	0-60 : 0-40	27% : 9%
Scissors	Baseline: Function + Label	40/20 : 60/80	20-60 : 0-80	40% : 46%
Stapler	Baseline: Function + Label	0/40 : 0/80	0-60 : 0-100	18% : 55%
Crayon	Baseline: Label only	60/20 : 60/ 0	20-60 : 0-80	36% : 40%
Napkin	Baseline: Label only	20/20 : 20/ 0	0-40 : 0-80	18% : 40%
Pitcher	Baseline: Label only	0/ 0 : 20/ 0	0-20 : 0-40	4% : 6%
Safety pin	Baseline: Function + Label	20/40 : 60/60	0-40 : 20-80	27% : 55%
Light switch	Baseline: Function + Label	0/ 0 : 20/20	0-40 : 0-60	9% : 26%
Broom	Baseline: Function + Label	20/40 : 60/60	20-80 : 20-80	38% : 58%
Book	Baseline: Label only	40/20 : 20/80	0-40 : 0-80	16% : 16%
Lotion	Baseline: Label only	0/ 0 : 0/20	0-20 : 0-20	2% : 2%
Pillow	Baseline: Label only	40/40 : 40/60	20-60 : 40-100	51% : 75%

One out of 12 objects elicited a lower mean percentage correct score in the treatment condition as compared to the baseline condition for that object. The object "washcloth" elicited a mean percentage correct score of 27% in the baseline condition and 9% in the function plus label condition, indicating an 18% decrease in correct performance.

Two out of 12 objects, "book" and "lotion," evidenced no change in the mean percentage correct scores in the treatment condition as compared to the baseline condition for each object. The mean percentage correct scores for the object "book" were 16% in both the baseline condition and the label only condition. Likewise, the mean percentage correct scores for the object "lotion" were 2% in both the baseline condition and the label only condition.

In general, object analysis results for Subject 1 indicated a greater increase in mean percentage of correct scores for those objects trained under the function plus label condition than for those objects trained under the label only condition. The mean increase in mean percentage correct scores was 15% for those objects trained under the function plus label condition and 9% for those objects trained under the label only condition.

For Subject 2 (Table III), a comparison of first and last session scores (%) for each condition indicated an increasing trend for each treatment condition. An examination of the range of scores (%) for Subject 2 showed the extreme variability of the subject's performances. For example, correct performance scores for the object "washcloth" ranged from 0% to 80% in the baseline condition and from 0% to 60%

TABLE III

## PERFORMANCES ON INDIVIDUAL OBJECTS

SUBJECT 2

<u>Object</u>	<u>Condition</u>	<u>First/Last Session Score (%)</u>	<u>Range of Scores (%)</u>	<u>Mean Percentage</u>	
				<u>Correct</u>	
Washcloth	Baseline: Function + Label	40/20 : 40/60	0-80 : 0-60	38%	36%
Scissors	Baseline: Function + Label	40/ 0 : 60/80	0-40 : 0-80	24%	38%
Stapler	Baseline: Function + Label	20/40 : 60/100	0-40 : 0-100	16%	46%
Crayon	Baseline: Label only	0/20 : 60/80	0-80 : 0-80	36%	38%
Napkin	Baseline: Label only	40/80 : 20/60	0-80 : 20-80	36%	51%
Pitcher	Baseline: Label only	0/60 : 0/20	0-60 : 0-40	9%	11%
Safety pin	Baseline: Function + Label	0/40 : 40/80	0-40 : 0-100	11%	51%
Light switch	Baseline: Function + Label	40/20 : 40/80	0-40 : 20-80	16%	53%
Broom	Baseline: Function + Label	20/40 : 60/60	40-60 : 20-80	40%	55%



in the following function plus label condition. Similarly, correct performance scores for the object "crayon" ranged from 0% to 80% in both the baseline condition and the succeeding label only condition.

An analysis of the mean percentage correct scores for Subject 2 in each condition showed that eight out of nine objects evoked higher mean percentage correct scores in the treatment condition as compared to the baseline condition for each object. For example, the mean percentage correct score for the object "light switch" was 16% in the baseline condition as compared to 53% in the following function plus label condition. This indicated a 37% increase in correct performance by Subject 2 for this object.

One out of nine objects evinced a lower mean percentage correct score in the treatment condition as compared to the baseline condition for that object. The mean percentage correct score for the object "washcloth" was 38% in the baseline condition as compared to 36% in the subsequent function plus label condition.

In general, object analysis results for Subject 2 indicated a greater increase in mean percentage of correct scores for those objects trained under the function plus label condition than for those objects trained under the label only conditions. The mean increase in mean percentage correct scores for those objects trained under the function plus label condition was 23% versus 6% for those objects trained under the label only condition.

#### Summary

Results of the present study revealed that the function plus label method was more effective than the label only method in training

receptive labeling of objects to the severely handicapped participants in the study. A comparison of trios revealed greater increases in correct performances in Trios 1 and 3 for both subjects. A comparison of objects substantiated these results in that individual objects trained using the function plus label method educed generally greater increases in correct performances than those objects which were trained using the label only method.

## CHAPTER V

### DISCUSSION

The purpose of this study was to determine the relative effectiveness of the label only and function plus label methods of training receptive labeling of objects in a classroom setting. An analysis of the results of the study indicated that the function plus label method was more effective than the label only method in training receptive labeling of objects to both of the severely handicapped subjects who participated in the study.

#### Comparison of Trios

Both subjects showed greater increases in correct performance scores (%) for trios trained under the function plus label condition. This may be due to the fact that performance of the function of the object is itself reinforcing to the subject (Janssen & Guess, 1978). Extrinsic reinforcers (social praise, edibles) were used consistently for both subjects in every condition, and the only change in treatment consisted of allowing the subject to perform the function of the object following a correct response in the function plus label condition. This would indicate that it was the performance of the function of the object on the part of the subjects which elicited the increases in mean percentage correct scores.

Additionally, for both subjects, the second function plus label condition evoked a greater increase in mean percentage correct scores. This may be explained by the assumption that the subjects learned the function of the object more easily during the second function plus label condition and therefore performed the function of each object independently more often. This treatise could be empirically proven if data were taken on the frequency in which subjects independently engaged in performing the function of the object being trained.

#### Comparison of Objects

For Subject 1, the greatest increases in mean percentage correct scores were evoked by the objects "stapler" (37%) and "safety pin" (28%). For Subject 2, the greatest increases in mean percentage correct scores were elicited by the objects "safety pin" (40%) and "light switch" (37%). An informal observation revealed that both subjects independently engaged in the functions of these objects to a high degree. In fact, both subjects would perform the function of these objects during the short period between trials. This informal observation would lend credence to the assumption that it is the performance of the function of the object being trained which facilitates the acquisition of the object label.

#### Environment for Training

The subjects' classrooms provided the environment for training for this study. The atmosphere in the classroom during training was always noisy and often chaotic. The subjects' regular teachers and three to five other students were always in the classroom during training. There was often music playing, and visitors would enter and

exit the room variably and often during training. All of this might account for the relatively low mean percentage correct scores as compared to the similar study by Janssen and Guess (1978). However, because greater increases in mean percentage correct scores occurred as a result of training using the function plus label method than the label only method, the function plus label method may be viewed as an effective and viable method of training receptive labeling of objects in a classroom environment.

These findings are relevant to the viability of the use of the function plus label method as an instructional technique for severely handicapped students. The typical classroom quite often resembles the training environment of this study, and therefore this study is a realistic reflection of the worth of the function plus label method of training receptive labeling of objects in an applied setting.

#### Limitations of the Study

This study was limited by the small sample of only two subjects. Even though the function plus label method of training was proven to be a more effective means of training receptive labeling of objects to these two subjects, it does not necessarily follow that this method will be more effective when used in training other severely handicapped individuals.

Another limitation of the study is that no formal attempts were made to measure maintenance and generalization of the skills acquired as a result of training. Even though an anecdotal observation revealed that Subject 1 maintained the receptive label of the object "stapler" and correctly responded to the request of his regular



teacher to bring her the stapler from her desk more than two weeks subsequent to training, this does not constitute a formal investigation. An investigation of this sort would provide invaluable information concerning the use of the function plus label method as a teaching tool in training receptive labeling of objects to severely handicapped individuals.

Further limiting this study is the fact that data were not taken on how often each subject independently performed the function of the object being receptively trained. Data of this kind would greatly substantiate the claim that it is the performance of the function of the object on the part of the subject which facilitates the acquisition of the receptive object label.

#### Suggestions for Further Research

The results of this study lead to several suggestions for further research. It would be interesting to determine if the function plus label method of training receptive labeling of objects is more effective than the label only method for a larger sample of subjects, for younger subjects, or for non-institutionalized subjects. An investigation into the maintenance and generalization of the skills acquired through training using the function plus label method would also be of value. Any further research into the effectiveness of the function plus label method of training receptive labeling of objects should incorporate some method to collect data on the frequency with which a subject independently engages in the function of the object being trained.

### Application of Results

Even though the present study was limited in various ways, it nevertheless substantiates the hypothesis that the function plus label method of training receptive object labeling to severely handicapped individuals is more effective than the label only method of training this skill. The use of function as a consequence, combined with those teaching methods proven to be effective with severely handicapped individuals, should prove to be a viable tool for teachers to utilize when training receptive object labeling to their students.

### Summary

Through a comparison of trios of objects trained under the function plus label method and the label only method, it was ascertained that the performance of the function of the object on the part of the subjects elicited increases in mean percentage correct scores for both subjects in the study. An informal observation as to the frequency in which both subjects independently engaged in the function of selected individual objects lends credence to this assertion. The use of the classroom as the environment for training was proven to be a feasible environment in which to utilize the function plus label method of training receptive labeling of objects. Various limitations of the study include the small sample of subjects used in the study, lack of formal methods of data collection concerning the maintenance and generalization of the skills acquired as a result of training, and the lack of formal collection of data concerning the frequency of independent performance of the function of the objects

on the part of the subjects. Suggestions for further research include the use of a larger sample of subjects, investigation into the maintenance and generalization of skills acquired through the use of the function plus label method, and incorporation of some means of determining how often a subject independently engages in the function of objects being receptively trained. Despite its limitations, this study demonstrated the effectiveness of the function plus label method of training receptive labeling of objects to the two severely handicapped subjects in the study, and perhaps this method will prove useful to educators of severely handicapped students.

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