IDENTIFYING AND IMPLEMENTING EMPIRICALLY SUCCESSFUL FEEDING TECHNIQUES WITH A SEVERELY INVOLVED PROFOUNDLY RETARDED INDIVIDUAL

A Thesis

by

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ABSTRACT

IDENTIFYING AND IMPLEMENTING EMPIRICALLY SUCCESSFUL FEEDING TECHNIQUES WITH A SEVERELY INVOLVED PROFOUNDLY RETARDED INDIVIDUAL. (May 1983)

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A recent debate in the literature concerns the issue of trainability of severely and profoundly retarded persons. One group of prominent professionals suggested that individuals with long histories of poor progress in institutional programs be assigned to sensory stimulating environments that focused on preventing regression, rather than on teaching functional skills. Other professionals argued that making educational decisions based on performance in institutional programs that did not employ empirically successful techniques would be wrong.

This study was undertaken to determine if a severely involved profoundly retarded young woman with a two and one half year history of poor progress in a traditional feeding program could be taught to feed herself using empirically successful feeding techniques. An A-B design was used to evaluate behavior change and

results indicated a variable but significant increase in percentage and rate of correct self-feeding responses.

Factors such as medication changes subject differences and what appear to be correlations with the concept of "learned helplessness" may have accounted for the amount of variability in the data and length of time spent in training. The study demonstrated that with one profoundly retarded subject the introduction of empirically successful feeding technology had a significant effect on the subject's self-feeding performance.

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DEDICATION

I would like to dedicate this effort to my parents, George and Sally Ulicny. The discipline and values that they instilled in me as a child were essential to the completion of this endeavor. Words cannot express the extent of my gratitude and love for my mother and father.

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Introduction

Recent debate in the scientific, clinical, and legal literature has been concerned with the concept of trainability of severely and profoundly retarded individuals. After several years of widespread acceptance, the assumption that all mentally retarded people, regardless of degree of handicap, can substantially benefit from "treatment/training/education/habilitation" has recently been challenged (Petitioner's Motion for Modification, 1978). Prominent professionals have argued that many individuals, due to the severity of their handicapping conditions and documented lack of progress in institutional self-help training programs, would not benefit from further formal training efforts (Ellis, 1979). These professionals argued that because such training efforts are both expensive and frustrating they should be abandoned in favor of providing these individuals with a maintenance oriented, sensory stimulating "enriched living environment." As Ellis (1981) stated:

> In my opinion, if all "training" programs in public residential institutions for the retarded were discontinued and those resources recommitted to other programs, quality of life for the majority of these persons would be greatly improved. (p. 108)

Other professionals concerned with recent developments in training technology have offered an alternative approach. Favell, Risley, Wolfe, Riddle and Rasmussen (1981) suggested that clients

served in "accredited" facilities are not being provided programs that closely approximate empirically successful techniques. Favell et al. (1981) contended that in a substantial number of cases, residents failure to progress in institutional training programs was not due to their untrainability, but rather to the inability or unwillingness of the institution to consistently provide high quality, program implementation.

Definition of Terms

The following definitions are intended to facilitate and clarify communication for the purpose of the study.

1. Severely involved profoundly retarded individuals: Individual subjects whose social quotient falls below 19 on the Vineland Social Maturity Scale and who exhibit one or more handicapping conditions in addition to profound mental retardation (i.e., seizure disorder, cerebral palsy, self-injurious behavior).

2. Tray time out: Withdrawal of the subject's food tray, by removing it from the subject's reach, for 30 seconds contingent on inappropriate behavior.

3. Generalization: The occurrence of relevant behavior under different non-training conditions without the scheduling of the same events in those conditions (Stokes & Baer, 1977).

Statement of the Problem

As the debate over trainability continues, professionals are left with many unanswered questions. Three areas of concern are: (a) are "all" mentally retarded persons trainable, (b) how do we

determine who receives training and who does not, and (c) what constitutes an appropriate training effort? In attempting to answer these questions in a logical, empirical manner, many areas of study remain.

Researchers have reported significant success in teaching functional skills to severely and profoundly retarded individuals (Edgar & York, 1979; Gold, 1972; Sailor, Wilcox, & Brown, 1980; Sontag, 1977). Unfortunately very little research has been directed at teaching these skills to lower functioning, multiply handicapped, severely involved, profoundly retarded persons. The paucity of research directed at this population may be attributed to several factors. Due to the extremely low cognitive levels and high probability of multiple handicapping conditions that further impede progress, researchers are concerned with the amount of time necessary to train these individuals in functional skills (Bailey, 1981). In addition, researchers are reluctant to report studies with negative findings, which only serves to subtract from the data base of information about this population (Billingsley, Note 1). Finally, systematic replication is the heart of any science (Hersen & Barlow, 1976; Sidman, 1960). The reluctance of professional journals to publish successfully replicated studies discourages researchers from engaging in replication research (Baer, 1981).

At the time of this investigation, few studies are available that identify, adapt and implement empirically successful techniques in teaching functional skills to severely involved

profoundly retarded individuals, who have long histories of poor progress in traditional training programs.

Question Under Investigation

The research question under investigation was: Can a person with a long period of no significant progress in a traditional training program be taught independent feeding using empirically successful feeding techniques (Azrin & Armstrong, 1973; Stimbert, Minor, & McCoy, 1977). It is hypothesized that by adapting and systematically changing these techniques to meet the specific needs of this population, the questions concerning the issue of trainability in feeding skills can begin to be answered.

Rationale

Training the highest level of independence in self-help skills is critical in the education of the severely handicapped (Snell, 1978). Without such skills mentally retarded persons can exert only minimal independence in their daily environments.

Intensive feeding programs have been demonstrated to be effective in teaching the severely and profoundly retarded independent eating skills (Azrin & Armstrong, 1973; Stimbert et al., 1977). Just as in normal development, eating represents, perhaps, the ideal skill for initial self-help training. Teaching independent feeding contains two "built in" training features. Since food ingestion is the final step in the eating chain and has a high probability of functioning as a reinforcer (Alberto & Troutman, 1982), additional primary reinforcement may be

unnecessary. Consequently, the removal of food or interruption of feeding provides the trainer with an aversive consequence to deal with inappropriate eating behavior (Snell, 1978).

Summary

Investigators have established successful programs where functional skills for severely or profoundly retarded persons were taught. Knowing this data is available, questions concerning the trainability of lower functioning individuals should not be answered with the negative response of "not trainable", until all plausible efforts in implementing empirically successful training technologies have been tried and found not to produce positive results. Only by systematically adapting, implementing, and assessing the effectiveness of these techniques as they relate to this population, can data be accumulated that will aid in making a rational decision concerning the educational futures of severely involved, profoundly retarded individuals.

Chapter 2

Literature Review

Since the purpose of this review is to establish empirically successful techniques for training feeding skills to persons with long histories of no significant progress in traditional programs, this review focused on studies that utilized operant techniques to teach feeding skills. Only feeding studies whose subjects fell in the severe or profound range of handicapping conditions were included. The majority of feeding programs report the use of treatment packages (more than one training technique), it is difficult to assess the effectiveness of each technique individually. In this review emphasis will be placed on describing and defining acquisition and deceleration techniques in separate topical sections and assessing their effectiveness in light of recent literature. Finally, specific training programs will be evaluated using three criteria, quality of the experimental design, interobserver reliability and comparison of experimental results.

As behavioral technologies become more advanced in teaching feeding skills, two general target areas have emerged. The first logically concerns strategies to train acquisition of independent feeding skills. Secondly, because many individuals in the severe/profound population exhibit a wide range of inappropriate behaviors (Snell, 1978; Sulzer-Azaroff, 1977) that either interfere with

independent feeding (throwing food) or are socially unacceptable (rapid eating), studies have focused on developing techniques for deceleration of these behaviors (Barton, Guess, Garcia, & Baer, 1970; Favell, McGimsey, & Jones, 1980).

Acquisition Techniques

Manual guidance. Independent feeding has been considered as one of the easier self-help skills to teach mentally retarded persons (Reid, 1982). The most commonly used method for teaching acquisition of independent feeding is manual guidance (Westling & Murden, 1978). This technique involves having the trainer physically guide the client's hand through the feeding sequence, then reducing the amount of guidance while reinforcing successful attempts at self-feeding (O'Brien, Bugle, & Azrin, 1972).

O'Brien et al. (1972) described two common methods for reducing guidance. One method breaks the feeding sequence into a series, or chain, of smaller steps. As the client progresses from step to step the trainer gradually fades the guidance systematically in a backward progression. In the O'Brien et al. (1972) study, they divided spoon usage into six steps. Their task analysis of steps and trainer guidance included: (1) placing the handle of the spoon in the client's dominant hand; (2) with the trainer guiding the hand the spoon was dipped into the food and lifted to one inch above the bowl; (3) the spoon was then guided to within two inches of the client's mouth; (4) the trainer gently opened the client's mouth; (5) the spoon was guided into the

child's mouth; (6) the client's hand was guided in an upward and outward motion to remove food from the spoon by the teeth or upper lip. Initially the client was guided through all six steps. O'Brien et al. (1972) systematically faded manual guidance as follows:

> Whenever the sequence was completed correctly on three successive assisted trials the child's hand was guided through one less step on the next assisted trial. Whenever an assisted trial was not completed correctly, it was interrupted and another guided trial was begun which included one additional (guided) step. Whenever a step was eliminated and added on three consecutive trials the client's hand was guided through a point between that step and the next lower step (e.g. if step three was being added and eliminated on the following trials the client's hand was guided to a point halfway between the bowl and her mouth. (p. 69)

The second method of reducing manual guidance involves a system of graduated guidance where the trainer, in response to pressure cues from the client, gradually shifts the locus of control from the hand, to wrist, to elbow, to upper arm, to shoulder and finally to a verbal prompt (Azrin & Armstrong, 1973). During this procedure the trainer should apply only enough assistance to get a response going. This forces the client to increase the amount of movement necessary to receive the reinforcer (food). In this method the client is guided through an entire response during each trial, throughout the training session.

In attempting to determine a superior method of manual guidance, studies in the literature indicated that the graduated guidance method (Azrin & Armstrong, 1973; O'Brien & Azrin, 1972; Stimbert, Minor, & McCoy, 1977) was more effective for two reasons.

First several published studies demonstrated that a most to least (decreasing assistance) hierarchy of prompts has been successful in the acquisition stages of learning with severe/profound learners (Azrin & Armstrong, 1973; Foxx & Azrin, 1973; Hunter & Bellamy, 1976; Stimbert et al., 1977).

In a recent study, Gentry, Day, and Nakao (1979) compared the effects of decreasing and increasing prompting sequences. They observed that during the acquisition stages of learning the decreasing method of prompting was most effective.

Also, several recent studies have found that a total task method (train every step every trial) was superior to a backward chaining method (train one step at a time in a backward progression) in training task acquisition with severe/ profound learners (Spooner, Weber, & Spooner, in press; Zane, Walls, & Thvedt, 1981). Findings of these studies seem to favor a graduated guidance method of manual guidance in training feeding skills, as this method employs both total task presentation and a decreasing prompting sequence.

Modeling. Although manual guidance was the most commonly used method in training acquisition of self-feeding, several other training tactics have been mentioned in the literature. Two studies (Nelson, Cone, & Hanson, 1975; O'Brien & Azrin, 1972) employed modeling of correct feeding behavior in their training programs. In modeling the trainer first demonstrates a correct eating response then directs the subject to imitate that response.

O'Brien and Azrin (1972) used this technique as a component of a multilevel prompt hierarchy. If the subject did not respond to a verbal direction, modeling was used, failure to elicit the correct response using modeling, resulted in the trainer physically guiding the client through a correct response.

Nelson et al. (1975) compared the effects of modeling versus physical guidance in teaching correct utensil use to 24 severely retarded males. Results of the Nelson et al. (1975) study showed that modeling had little or no effect on increasing correct responses while physical guidance techniques produced significant increases. One explanation for these findings is the suggestion by some researchers that modeling techniques require a more abstract level of learning than manual guidance (York, Williams, & Brown, 1976).

Positive reinforcement. Investigators employed positive reinforcement other than the food itself to increase appropriate mealtime behavior (Azrin & Armstrong, 1973; Henricksen & Doughty, 1967; Lemke & Mitchell, 1972; Martin, MacDonald, & Omichinski, 1971; Stimbert et al., 1977). Henricksen and Doughty (1967), as part of their training package, used verbal ("that's a good boy"), facial approval and pats on the back contingent on proper eating behavior to increase appropriate responding. Azrin and Armstrong (1973) advocated continuous reinforcement throughout the training session, to ensure that training is reinforcing for the client. Azrin and Armstrong (1973) further suggested:

> Do not rely on a verbal "good" as sufficient to motivate the student. Verbal praise should be pleasant and enthusiastic; tactual contact should be generous, ranging from rubbing the shoulders and back to giving the student a hug when he/she does well; and facial approval should also be used, especially with deaf students. (p. 11)

Reports in the literature documenting the success of positive reinforcement for increasing behavior are too numerous to mention. Provided the trainer ensures the "correct" selection of reinforcers, positive reinforcement is the most effective way to increase behavior (Epstein & Skinner, 1982; Sulzer-Azaroff & Mayer, 1977).

Intensive training. Several studies reported the use of intensified training methods to accelerate treatment progress. One method involved the removal of environmental distractions by either moving the clients to a room other than their regular dining area (Groves & Carroccio, 1971; Lemke & Mitchell, 1972; Henricksen & Doughty, 1967; O'Brien & Azrin, 1972; Stimbert et al., 1977) or training in the clients dining area at times other than regularly scheduled mealtimes (Azrin & Armstrong, 1973; O'Brien et al., 1972; Barton et al., 1970). Three studies, in an attempt to increase training opportunities, divided regular meals into brief or "mini-meals" (Azrin & Armstrong, 1973), ranging from five per day (O'Brien et al., 1972; Stimbert et al., 1977) to nine per day (Azrin & Armstrong, 1973).

Although many research questions remain unanswered concerning the intensive training method versus traditional approaches, several studies have presented significant results using intensive

methods. Azrin and Armstrong (1973) described the use of a control group to compare an intensive feeding program with traditional methods. Outcomes of this study show that while all subjects in the intensive program had reached training criterion within 12 days, averaging 5 days, only 36% of the control group subjects had met criterion following 18 days of traditional training efforts. In a recent review of self-help research Reid (1982) stated that "results of this program have suggested the superiority of intensive procedures over more traditional approaches in terms of overall amount of improvement in self- feeding skills" (p. 219). Stimbert, et al. (1977) also reported successful results in using intensive training techniques to teach self-feeding to profoundly retarded individuals. Although these are the only studies reporting the use of intensive training procedures to teach self-feeding, other investigators have presented significant results in training other behaviors.

Azrin, Schaeffer, and Wesolowski (1976) reported the use of intensive training techniques such as long training sessions, manual guidance, praise, use of two trainers, and oversize clothing in teaching dressing skills. Seven students taught by this method learned to put on and remove five garments after a median of ten hours spent in training.

Intensive training methods have also been used in a study by Foxx and Azrin (1973) to rapidly toilet train severely handicapped individuals. Results show that the average learning time for

institutionalized retarded persons was four days, eight hours per day.

Deceleration Techniques

Timeout. The most frequently cited operant strategy for reducing inappropriate mealtime behavior was a form of timeout from positive reinforcement. Timeout is defined as a procedure by which access to the sources of reinforcement is removed for a particular time period, contingent upon emission of a response (Sulzer-Azaroff & Mayer, 1977). Barton et al. (1970) reported using timeout exclusively for reducing undesirable behaviors in sixteen severely/profoundly retarded males. In this study timeout involved removal of the subject to a timeout room for stealing food and a 15 second food removal for messy eating. In another study, Albin (1977) also used removal of the subject to a timeout room contingent upon undesirable behavior. In this experiment, if the subject threw a food tray for the first time, a new tray of food would be given after the subject returned from a timeout room. A second occurrence of tray throwing would result in the subject's meal being missed.

Research has also been conducted using food removal for a specified period of time contingent on inappropriate behavior as the sole timeout procedure (Christian, Holloman, & Lanier, 1973; Groves & Carroccio, 1971; Lemke & Mitchell, 1972; Zeiler & Jervey, 1968). The specified amount of removal time varied from 10 seconds to 30 seconds (Christian et al., 1973; Lemke & Mitchell, 1972).

Martin et al. (1971), rather than remove the food from the client, timeout consisted of pulling the chair (while the subject was sitting on it) away from the table for 15 seconds. The subject had to remain quietly in her chair for the last five seconds of the timeout period before being pushed back to the table to continue eating. If the subject exhibited inappropriate behavior during the last 5 seconds of timeout, the timeout was extended until five seconds elapsed without disruption (Martin et al., 1971).

A less aversive method of timeout reported was the use of an interrupted-extinction procedure (Azrin & Armstrong, 1973; Favell, et al., 1980; Henricksen & Doughty, 1967; Miller, Patton, & Henton, 1971; O'Brien & Azrin, 1972; O'Brien et al., 1972). This procedure involved the mild physical restraint of the subject's arm (for a short period of time) to prevent undesirable eating behavior. Interruption-extinction is based on the principle that if the undesired behavior is blocked at the outset, or is not successfully completed, it will not be rewarded (Henricksen & Doughty, 1967).

Two studies reported the combination of timeout procedures to reduce inappropriate behavior. These experiments used both food removal and interrupted-extinction timeout procedures to decrease undesirable mealtime behavior (O'Brien & Azrin, 1972; Stimbert et al., 1977).

As a method to reduce inappropriate behavior in the severely handicapped, timeout has been successfully applied to self-injurious behavior (Duker, 1975), aggressiveness (Bostow & Bailey,

1969), obscene language (Lahey, McNees, & McNees, 1973), and disruption during mealtime (Barton et al., 1970). Of the 16 studies reviewed, 15 used some form of timeout procedure to reduce inappropriate mealtime behavior. The effects of timeout can be most clearly seen in three studies that used timeout as their primary training technique.

Barton et al. (1970) demonstrated the effective reduction of disgusting mealtime behaviors by removing the student from the meal contingent upon occurrence of these behaviors. Results indicated that disgusting behaviors decreased from 36% during a baseline condition to 5% during the final stages of training. Henricksen and Doughty (1967) reported the use of physical interruptions to decrease inappropriate mealtime behaviors in four severely retarded boys. Interruptions consisted of the trainer holding down the subject's arm if inappropriate behavior continued after a verbal warning was given. A significant drop in the number of interruptions (221, 109, 93, 75) per boy over a four-week training period was observed.

Martin et al. (1971), in a study comparing the effects of social reinforcement for appropriate eating behaviors and timeout (removal from the table for 15 seconds) for food slopping observed that while social reinforcement had little effect on increasing appropriate responses, the timeout did decrease food slopping in all subjects. On the other hand, O'Brien et al. (1972) did not report such success when timeout alone was used initially with

their client. The timeout procedure in this case consisted of an interruption-extinction procedure contingent on incorrect feeding responses. However, when this procedure was paired with graduated guidance, correct feeding responses increased from 0% to 90%. Once acquisition had been established, the interrupted-extinction procedure proved effective in reducing incorrect responses, even when used alone.

Overcorrection. Once the acquisition phase of training had been completed, Azrin and Armstrong (1973) implemented a maintenance procedure based on the overcorrection principle first described by Foxx and Azrin (1972).

Two types of overcorrection have been described in the feeding literature. The first, restitutional overcorrection, is used when an environmental disruption results from an inappropriate act. It requires the individual to restore the environment to a state much better than before the inappropriate act. For example, a subject caught stealing food from another client during the Azrin and Armstrong (1973), training methodology, must return the food to the client then give the client some of his own food. Finally the offender must apologize to the victim and everyone else sitting at the table.

In positive practice overcorrection the client must repeatedly practice the positive behavior contingent upon an error or inappropriate behavior. If a client brings a spoon to the mouth with no food on it, he would be required to practice loading and

bringing the spoon to the mouth several times before being allowed to continue eating (Azrin & Armstrong, 1973).

Stimbert et al. (1977), in a systematic replication of the Azrin and Armstrong (1973) "mini-meal" program with lower functioning subjects, used both restitutional and positive practice overcorrection techniques. Unlike Azrin and Armstrong (1973), who only used overcorrection during a maintenance phase of training, Stimbert et al. (1977) employed overcorrection techniques throughout the training program.

Although overcorrection is an aversive technique, it appears less likely to produce as much excessive negative generalization, aggression, withdrawal, and negative self comments as intense punishment (Sulzer-Azaroff & Mayer, 1977). Also, some educational benefits may occur when using overcorrection; Foxx and Azrin (1972) reported the rapid and lasting effects of overcorrection in reducing self-stimulatory behavior, allowing for shorter periods of treatment. Since overcorrection requires the client to engage in or practice the correct behavior, the learning process is enhanced. Finally milder forms of punishment such as overcorrection techniques are ethically preferable to more aversive punishment methods used for reducing undesirable behavior (Sulzer-Azaroff & Mayer, 1977).

Experimental Designs

In a recent review of operant feeding studies, Westling and Murden (1978) suggested that while all studies reported improvement

in mealtime behaviors of subjects, experimental control was lacking in several studies and weak in many others (see Table 1). In five studies, continuous measurement data were recorded without reporting baseline levels (Berkowitz, Sherry, & Davis, 1971; Groves & Carroccio, 1971; Henricksen & Doughty, 1967; Lemke & Mitchell, 1972; Zeiler & Jervey, 1968).

Single subject reversal designs were employed to demonstrate functional relationships in studies by Martin et al. (1971) and Song & Ghandi (1974). O'Brien et al. (1972) reported the use of an intricate within subjects design that included eight phases.

Two studies employed multiple baseline designs to demonstrate experimental control. Barton et al. (1970) used a multiple baseline across responses design in reduction of disgusting mealtime behaviors. A multiple baseline across subjects design which focused on acquisition of correct feeding skills and the reduction of inappropriate behavior was described by Stimbert et al. (1972).

The use of control groups was reported in three studies (Azrin & Armstrong, 1973; O'Brien & Azrin, 1972; Nelson et al., 1975). Azrin and Armstrong (1973) specifically studied intensive training methods in comparison to methods where trainers were simply told to do the best they could.

Table 1

Study	Subjects	Target Behaviors	Design	Reliability	Results
Albin (1977)	Three profoundly retarded 1 male, 2 females	Self-feeding with spoon, reduction of inappropriate behavior	Probes, slight variations in feeding schedule	None reported	All subjects learned to feed themselves within 12 days, inappropriate behaviors decreased from 15/day during baseline to 5/day during maintenance.
Azrin & Armstrong (1973)	Twenty-two severely/ profoundly retarded	Correct use of knife, fork, spoon and napkin. Reduction of incorrect feeding behaviors	Pre-and post-test for experimental and control group	96%	All subjects in experimental groups reached criterion (100% correct responses) in 12 days, with an average of 5 days.
Barton et al. (1970)	Sixteen severely/ profoundly retarded males	Reduction of inappropriate mealtime behavior	Multiple baseline across responses	86%-95%	Decrease in inappropriate behavior from 36% in baseline to 5% at the end of training.
Berkowitz et al. (1971)	Fourteen severely/ profoundly retarded males	Self-feeding with a spoon	Continuous measurement	None reported	Self-feeding learned in times ranging from 2 to 60 days.
Christian et al. (1973)	Twenty-eight severely/ profoundly retarded women	Self-feeding with a spoon and reduction of inappropriate mealtime behavior	Two probes-return to baseline condition	None reported	Two groups showed a decline of inappropriate responses from 25 and 15/day during baseline to 10 and 5/day in a probe on Day 40.
Groves & Carroccio (1971)	Sixty severely/profoundly retarded women all but eight had I.Q.'s below 39	Independent eating with a spoon, reduction of hand to food responses	Continuous measurement	None reported	Mean number of spoon responses per meal rose from 12.33 on Day 1 to 24.00 on Day 33. Hand to food responses per meal decreased from 71.66 to 9.66 over the same training period.
Henricksen & Doughty (1967)	Four profoundly retarded males, Vineland S.Q. = 21, 19, 15, 11	Reduction of undesirable mealtime behavior	Continuous measurement	None reported	Significant decrease ($p < .01$) from week one to week thirteen.

Table 1 (continued)

Study	Subjects	Target Behaviors	Design	Reliability	Results
Lemke & Mitchell (1972)	One severely retarded male. I.Q. less than 20	Self-feeding with a spoon	Continuous measurement	None reported	Appropriate responses per meal increased from 0 to 12.5 on third session then become variable throughout training.
Martin et al.	Four severely/profoundly retarded women. I.Q.'s ranged from untestable to 20	Food slopping	Reversal design	68%	Social reinforcement had no effect, timeout reduced slopping in all subjects.
Miller et al. (1971)	One profoundly retarded male	Self-feeding with spoon and fingers as appropriate.	Pre- and post-test	None reported	Appropriate feeding responses were increased.
Nelson et al.	Twenty-four mildly/ profoundly retarded males. Mean I.Q. = 25.3	Correct use of knife, fork, and spoon	Continuous measurement control groups	90%	Significant improvement using physical guidance, modeling produced no change.
O'Brien & Azrin (1972)	Eleven severely retarded males and females	Various self-feeding responses	Pre- and post-test	99%	Training groups eating. Errors decreased from 30% to 0% while no training group showed an increase from 30% to 55% in eating errors.
O'Brien et al. (1972)	One profoundly retarded female. I.Q. untestable	Self-feeding with a spoon	Intricate within subjects design	97% for correct responses 94% for incorrect responses	Most gains shown in manual guidance, interrupted extinction phase.
Song & Ghandi (1974)	Three profoundly retarded	Self-feeding with a spoon	Reversal design	95%	All subjects reached criterion.

Table 1 (continued)

Study	Subjects	Target Behaviors	Design	Reliability	Results
Stimbert et al. (1977)	Six profoundly retarded children. S.A. = .89, 1.5, 1.62, 1.0 years for four subjects. M.A. = .75, 1.0 for two subjects	Self-feeding with a spoon, reduction of inappropriate mealtime behaviors	Multiple baseline across subjects	60%-100%	All subjects increased correct feeding responses while decreasing incorrect responses to near zero. Inappropriate responses were reduced to near zero level in all subjects.
Zeiler & Jervey (1968)	One profoundly retarded woman. S.A. = 7 months	Self-feeding with a spoon	Continuous measurement	None reported	A reduction of prompted responses from 100% initially to 20% during the final meals.

Interobserver Reliability

Interobserver reliability is a term used to refer to consistency of measurement. In applied behavioral analysis it is often measured by assessing the percentage of agreement between two or more independent observers (Sulzer-Azaroff & Mayer, 1977). This method reduces the possibility of human error and ensures that data are consistent.

In general, researchers aim for an interobserver reliability of approximately 90%. Anything less than 80% is a signal that some serious methodological problems exist (Alberto & Troutman, 1982). Interobserver reliability for all studies reviewed are presented in Table 1.

Comparison of Experimental Results

Results of all studies reviewed are presented in Table 1. In evaluating results of individual studies several factors must be taken into consideration, including the functioning levels of subjects used for each experiment, the degree of improvement recorded, and finally the time spent in training.

Fourteen studies listed subjects whose functioning levels fall into the profound range of mental retardation. The lowest functioning clients were reported by O'Brien et al. (1972), untestable, Zeiler and Jervey (1968) SA = 7 months, and Stimbert et al. (1977) mean SA = 1.25, mean MA = .87.

Azrin and Armstrong (1973) reported 100% of subjects trained to criterion using a knife, spoon and fork with only a 9% error

rate compared to 8% errors for institution staff. All training was completed within 12 days. The mean I.Q. for subjects in this study was 15.

Albin (1971) also lists 12 days as the time necessary to train all subjects to feed themselves with a spoon. Results indicated that inappropriate responses were substantially reduced, but give no data on correct self feeding responses. Stimbert et al. (1977), demonstrated the reduction of incorrect responses and inappropriate behaviors to near zero levels in all subjects.

Although they used the same training procedures (with slight modifications) as Azrin and Armstrong (1973), Stimbert et al. (1977) did not observe the same speed of training in their replication study. Training all subjects to criterion in this experiment took an average of 28 days; one reason mentioned for the difference in training time are the much younger and lower functioning subjects used by Stimbert et al. (1977).

Song and Ghandi (1974) also stated in their results that all subjects reached criterion of self-feeding with a spoon; unfortunately criterion mastery in this study was listed at 50% correct responses per meal. Time spent in training for the three subjects in Song and Ghandi's (1974) study was 101, 140, and 290 meals.

Both O'Brien et al. (1972) and Zeiler and Jervey (1968) found significant increases in self-feeding responses or reduction of inappropriate behaviors (see Table 1). O'Brien et al. (1972)

reported a training period of 11 days while it took Zeiler and Jervey (1968) five months to reach independent feeding with their subject.

Summary of Review of Literature

In attempting to document empirically successful feeding programs with severe/profound learners this review has focused on several aspects of overall treatment packages and their effectiveness. Based on this information a compilation of two programs (Azrin & Armstrong, 1973; Stimbert et al., 1977) seems most successful and is consistent with the needs of this population.

An evaluation of the Azrin and Armstrong program demonstrates that the authors combination of individual training techniques (graduated guidance, timeout, positive reinforcement, and intensive training) are those shown to be empirically successful in recent literature reports. Unlike other studies suggesting such rapid treatment results, the Azrin and Armstrong (1973) program is backed by sound research design and high interobserver reliability. Most importantly in keeping with the strength of experimental design the program has been successfully replicated (Stimbert et al., 1977).

Stimbert et al. (1977) examined the effectiveness of Azrin and Armstrong's methods on much younger and lower functioning subjects. With a few modifications specific to their subjects, they reported the acquisition of independent feeding skills with lower functioning subjects within 28 days. These successful results were

then evaluated and generalized across subjects using a multiple baseline design.

The two studies have combined effective training techniques and sound experimental design to produce rapid results in the acquisition of independent feeding skills and the subsequent reduction of inappropriate behavior with severe and profoundly retarded individuals. The literature demonstrates these studies to be both internally and externally valid and based on operant principles identified as most successful with the severe/profound population.

Chapter 3

Method

This study was undertaken to determine if a severely involved, profoundly retarded individual with a history of poor progress in a traditional feeding program could be taught to feed herself once empirically successful self-feeding technology (Azrin & Armstrong, 1972; Stimbert et al., 1977) had been implemented. The subject, setting, design, procedures, including measurement methods and evaluation techniques used in this study are described in this chapter.

Subject and Setting

Subject selection was based on three criteria:

1. Documented retardation in the profound range, a social quotient below 19 on the Vineland Social Maturity Scale.

2. Sufficient motor development to grasp a spoon or cup and transport food to the mouth, documented by an Occupational Therapy evaluation.

3. Enrollment in a feeding program for at least one year, without meeting the goal of that program nor showing significant progress toward that goal.

One subject, a 16 year old profoundly retarded woman (Vineland SQ = 5; Bayley = 3 mos.) who is nonambulatory and suffers from infrequent but severe seizures, partially controlled by 90 mgs of

Phenobarbital daily, was selected for inclusion in the study. She has resided in a residential institution for nine years, the last eight in an experimental service delivery ward for profoundly retarded multihandicapped individuals. The subject had been enrolled in formal feeding training for a period of two and one-half years and had made no significant progress within the last year. Once manually guided through the procedure of scooping food from the plate by the trainer, she would grasp a spoon and bring the food from the plate to mouth. Given sufficient prompts and guidance, she could also grasp a cup and bring it to her mouth, with considerable spilling.

The subject was dependent on cottage staff for the maintenance of all her basic skills. She had no expressive language skills and because of her low functioning level, her receptive language skills were unknown. No behaviors were reported which the subject would consistently perform on command, the majority of her time was spent in her wheelchair mouthing a rubber toy. Cottage staff had identified the subject as one of the most indolent and reticent clients on the ward.

The study took place at a State operated residential facility for the mentally retarded. Training was conducted in the subject's bedroom so that only the child, trainer and observer were present. This was done to minimize outside distractions to the subject. Food intake was monitored and a nurse was available to check the subject's weight and any fluctations in her health.

Design

An A-B or baseline treatment design was selected for use in this study. Given the long period of no progress in a traditional feeding program and the ethical questions raised by reversing this target behavior, the A-B design was best suited for demonstrating behavior change.

Procedures

To provide more opportunities for training, the three daily meals were divided into five smaller meals (Stimbert et al., 1977), served 2 - 2 1/2 hours apart from 7:00 a.m. to 5:00 p.m. The breakdown of meals consisted of dividing breakfast (7:00 a.m. and 9:30 a.m.), lunch (12:00 noon and 2:00 p.m.), and serving a complete supper (5:00 p.m.). The subject received exactly the same amount of food as she had before training began, and the subject was allowed to continue eating until all food was eaten.

To maintain consistency of training, all trainers attended two workshop sessions before implementing treatment. During these sessions trainers were thoroughly briefed in all response definitions and training procedures. Handbooks (see Appendix A) containing all relevant information were prepared and given to each trainer who was to participate in the project.

Apparatus. Two adaptive devices were used during both the baseline and treatment phases (see Appendix B). The first, a swivel spoon, was an oversized plastic handled spoon that rotated in the direction of gravitational pull. This allowed the subject

to bring the food to her mouth without spilling even if her feeding form was awkward. The second apparatus was a plastic dish with one end raised like a bowl so food could be pushed against the raised end and on to the spoon. This raised end also served as an end point of the dipping motion, and provided the subject with a prompt to bring the loaded spoon to her mouth. Both these adaptive devices had been used in the subject's previous feeding program.

In an effort to further reduce staff dependence, in an already extremely dependent subject, an arm sling (see Appendix B) was designed and fixed to her wheelchair. This sling completely supported the subject's elbow while still allowing the freedom of movement to perform a correct dipping response. The sling was used only at mealtime and was designed so it could be easily removed when not in use.

Food Variety. To enhance the reinforcing properties of the food, several variations of the normal institutional diet were presented. Once weekly, trainers would go shopping for foods that the subject would not be regularly exposed to. These mealtime manipulations consisted of the simple addition of spices and condiments to substituting entirely different meals than those prepared by the institution. An evaluation of the subject's performance when institutional meals were presented versus when variety foods were served was computed by comparing the mean percentage of correct responding for each type of meal for the

entire study. All efforts were made to ensure that the subject was being presented a nutritionally balanced diet.

Response Definitions

A correct response was defined as independent (requiring only a verbal cue) transfer of food from the tray to the mouth with hands, spoon or glass, as appropriate to the food being eaten. Incorrect responses were attempts to move food from plate to mouth by incorrect use of hands or utensils or transfers of food requiring more than verbal guidance. Inappropriate responses were any disruptive behavior incompatible with the training procedure. Screaming, spitting, throwing food, and refusal to eat were all considered inappropriate responses.

Specific Training Techniques

Manual guidance. As previously mentioned, this subject would bring the spoon to her mouth when guided through a scooping response. It was determined that the scooping response would be treated as a single target behavior and manual guidance would only be used to guide her through the scooping motion, this required her to complete the feeding response independently. This procedure consisted of allowing the subject to bring the spoon back to the plate after eating the previous spoonful. The command "dip" was then given, followed by a three second time delay allowing the subject to initiate the response unaided. If there was no subject response after three seconds the trainer guided the subject only through the food scooping response. The systematic reduction of

prompts for the response consisted of full hand on hand guidance, two finger guidance, one finger guidance, touch, and finally to the verbal cue (dip) only. At each stage only enough guidance was used to complete a response, thus requiring the subject to perform the majority of the movement herself to receive the reinforcer.

Tray timeout. Tray timeout consisted of removing the food tray from the subject's reach for 30 seconds contingent upon inappropriate behavior. If the inappropriate behavior had not stopped after 30 seconds, the tray was not returned until the behavior had ceased for five consecutive seconds. During timeout the trainer did not engage in any verbal or physical interaction with the subject. When the tray was returned, the trainer initiated training immediately and continued to provide reinforcement when appropriate.

Correction procedures. Provided the subject made some initial movement on command, all errors were corrected by the trainer guiding the subject through a correct response. Once the subject demonstrated an average of 30% correct responses per meal, a positive practice overcorrection condition was applied every time the subject refused to initiate a dipping response. This condition consisted of the trainer reprimanding the subject, "No, you have to dip", then guiding the client through ten practice dips before being allowed to continue eating. Since this subject did not exhibit inappropriate behavior of a disruptive nature, restitutional overcorrection was not used as a training technique.

Positive Reinforcement. Throughout treatment the trainers provided generous verbal and social (hugs, stroking) reinforcement for all subject-initiated attempts at correct self-feeding. Continuous talking and pleasant descriptions of what was taking place were employed to ensure that training was as enjoyable as possible.

A brief play period in which the trainer would engage the subject in a favorite activity (hand clapping, hand and arm shaking) followed each training session. The intensity of the play period was contingent upon the subject's performance.

During the fluency building period of training, attempts were made to increase correct responses by varying the intensity of reinforcement contingent upon the subject's response. If the subject initiated movement but had to be corrected to complete the response, only verbal reinforcement was used. If the subject performed a correct response independently, lavish verbal and social reinforcement were delivered immediately following the correct response.

Measurement

Baseline sessions consisted of placing the food in front of the subject, putting the spoon in her hand and instructing her to begin eating. The subject was then free to eat in any manner without interference until the food was eaten or 30 minutes had elapsed. During this condition trainers recorded each instance of correct, incorrect or inappropriate responding.

Once the training procedure began, continuous measurement data were recorded for each session. These data included frequency of correct, incorrect, and inappropriate responses, type and amount of food eaten, length of each meal, and number of timeouts and overcorrections per meal. Data were graphed using both percentage correct per day and rate of correct responses on the Standard Behavior Chart for breakfast, lunch and supper. Criterion of mastery for this program was 90% correct responses over three consecutive meals.

Reliability

Interobserver reliability agreement scores were calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100 (Hersen & Barlow, 1976). Agreement was defined as both observers scoring the same code for correct and incorrect responses.

Generalization of Training Procedures

Since two major modifications in this study's subject's mealtimes (schedule and setting) had been altered, it was necessary to program for the generalization of learned target behaviors back to her normal mealtime habits. The first modification, increased mealtime opportunities, was systematically faded out by first reducing meals from five per day to four per day. When stability of performance was reached at this level, the subject returned to her normal schedule of three meals per day given at normal cottage mealtimes.

The second transfer involved gradually moving the subject back into her normal dining area while simultaneously increasing the distance between the subject and the trainer. Close monitoring of the subject's performance was necessary during these generalization transfers. Any negative fluctuations in the data resulted in a step backward in the transfer chain.

Summary

A 16-year-old profoundly retarded woman was selected for inclusion in the study. The study used procedures such as modified feeding schedules, specific training techniques, increasing variety of foods and adaptive devices in its treatment program. An A-B design was selected to evaluate the training effects and procedures were explained to generalize the mealtime modifications back to her normal schedule.

Chapter 4

Results

The research question posed by this study was: can an individual with a long history of poor progress in a traditional feeding program be taught to feed herself once empirically successful training techniques (Azrin & Armstrong, 1972; Stimbert et al., 1977) are implemented? Results of this study have been presented in this chapter using two data presentation techniques, mean percentage of correct feeding responses per day and rate of correct responses per meal. Adaptations specific to the subject and situation were made to the empirically successful methodology. Also, supplemental assessment was completed to determine the effect, on the subject's performance, when a variety of foods were presented versus when her normal institutional meal was served.

Baseline data were recorded during six successive meals while data following implementation of treatment, were recorded in successive calendar days. The first correct response was recorded on the 48th day of training; all responses up to that time had been physically prompted and scored as incorrect. Day seven through forty-eight are represented on all charts as a blank area labeled 0 correct responses.

The mean percentage of correct responses per day during baseline and treatment phases is provided in Figure 1. This graph

presents an overall picture of average daily performance. The Y axis is the percentage of correct responses per day computed by dividing the correct responses by the total number of responses per meal, then averaging the percentage correct of the three meals. The X axis represents successive calendar days.

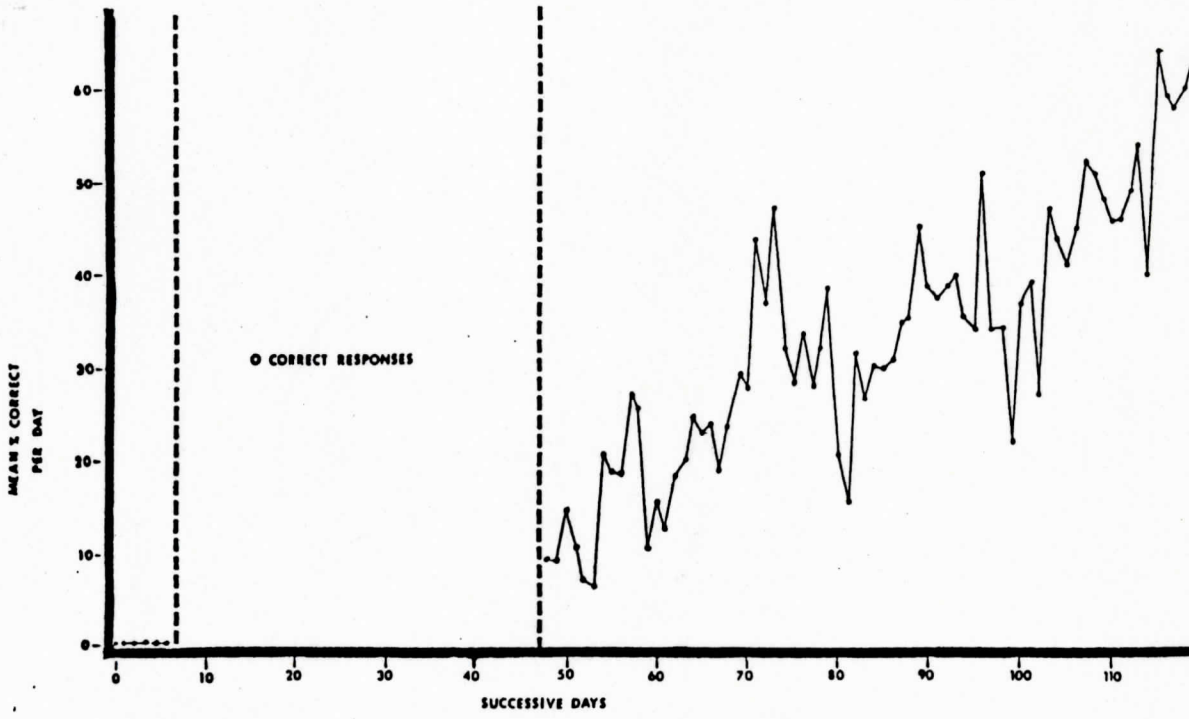

Figure 1. Mean correct-self feeding responses per day.

Data in Figure 1 show six successive baseline meals scored as zero correct responses. During baseline the subject made no attempt to transfer food from her plate to her mouth using hands, spoon, or cup. The plate was lifted twice from the table to her mouth, but only to engage in self-stimulatory mouthing of the edge of the plate. On both occasions all food was spilled from the

plate and no attempts were made to eat it. After Day 48, a variable but significant increase in mean percentage correct per day was observed. The data revealed an average of 14.7% correct responses during the first ten days of training, increasing to an average of 55.6% correct responses during the last ten days reported.

Data are presented on the Standard Behavior Chart for breakfast, lunch, and supper, respectively. The Standard Behavior Chart is a behavior measurement tool that is sensitive to small changes in behavior (Pennypacker, Koenig, & Lindsley, 1972; White & Haring, 1980). All behaviors regardless of their topography, have count and time as their two common elements (Skinner, 1938). The number of occurrences of the specified behavior is measured over the time in which the behavior is monitored.

On the Standard Behavior Chart, frequency is the standard unit of behavior measurement along the Y axis. Frequencies are scaled in logrithms to permit sensitive measurement and recording of behaviors which frequencies vary from 1,000 per minute to 1 per 1,000 minutes. The 1 line in the center of the Y axis represents one movement per minute, any data above the 1 line indicate more than one movement per minute, while data below the 1 line indicate less than one movement per minute. The X axis represents successive calendar days.

The logrithmic nature of the chart also shows changes in celeration, or rate of learning, as a linear function on the chart

(Koenig, 1972), and is represented on the chart by a "line of best fit" or a description of the median for a group of frequencies. Celeration was the primary method for assessing behavior change and increasing performance is indicated by a multiplication sign (x) and decreasing performance by a division sign (÷). For example, a celeration of X1.5 would indicate an average increase of 1.5 movements per minute per week, while a celeration of ÷1.5 represents an average decrease of 1.5 movements per minute per week. Celerations are presented for the rate of correct responding and speed of responding. Celerations for speed of responding in the (x) direction indicate less time spent in training, while celerations in the (÷) direction would indicate increased training time.

Correct feeding responses per minute for the breakfast meal are recorded in Figure 2. Figure 2 reveals an increase of correct responses per minute of X1.3. An increase of speed of responding was also recorded, and is represented by the line X1.07. A visual analysis of Figure 2 indicates the highest degree of variability of correct responses for the three meals. Correct responses per minute during breakfast ranged from .017 to 1.8.

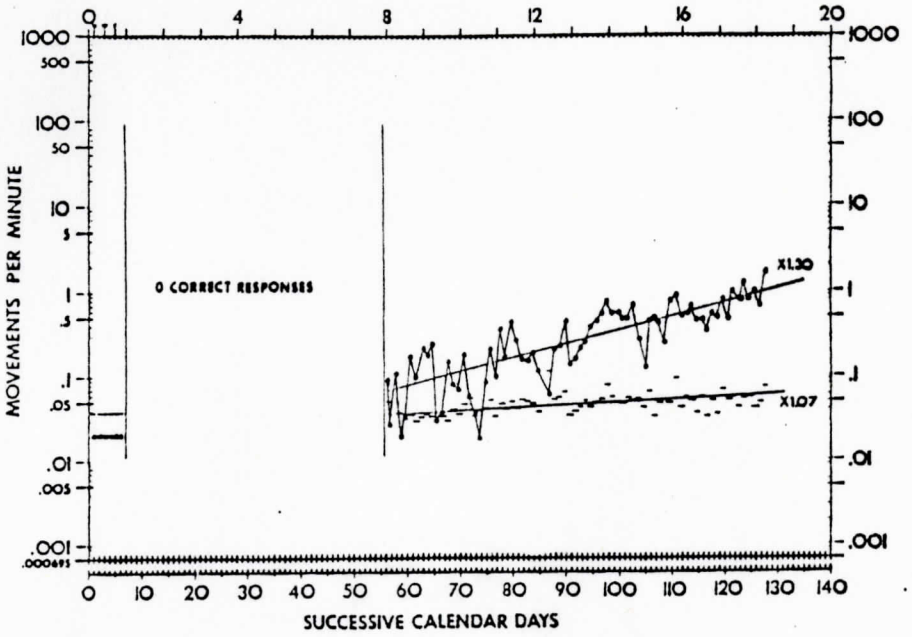

Figure 2. Correct feeding self-responses per minute for breakfast.

Correct responses per minute for lunch are recorded in Figure 3. Celerations for correct responses and speed of responding were X1.27 and X1.05, respectively. Initial lunch data show some variability of correct responding but after Day 89, rate of correct

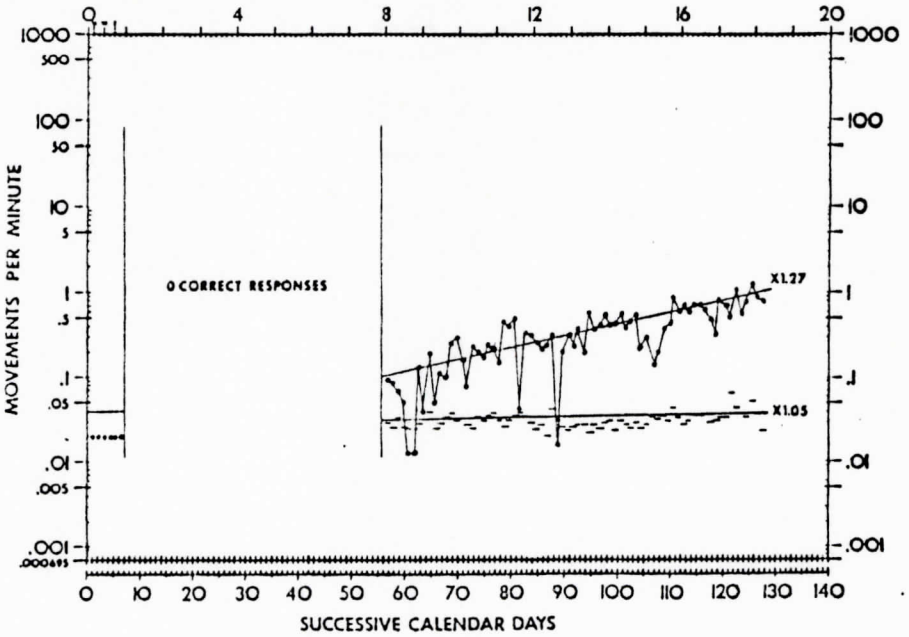

Figure 3. Correct self-feeding responses per minute for lunch.

responses remain relatively stable. During lunch the frequency of correct responses per minute ranged from .012 to 1.3.

Correct responses per minute for the supper meal are presented in Figure 4. The data show an increase for correct responses of X1.20. An increasing celeration of X1.05 was also recorded for speed of responding during supper. A visual analysis of Figure 4 illustrates the least amount of variability of correct responding of the three meals presented. Frequency of correct responses per minute ranged from .095 to 1.5, once correct responding was established.

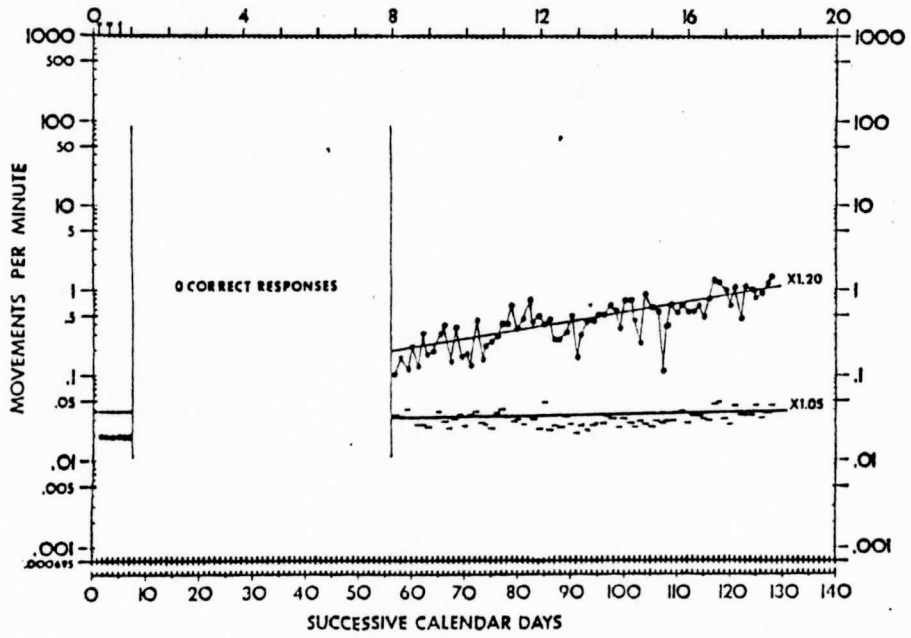

Figure 4. Correct self-feeding responses per minute for supper.

Food Preference

In an attempt to assess a variety of foods on the subject's performance, each meal was categorized as institutional or variety

and the data for each was analyzed. The mean percentage of correct responses recorded when institutional food was presented was 28.98%, while the variety meals produced a mean of 29.60%.

Reliability

Interobserver reliability agreement scores were calculated by dividing the number of agreements by the number of agreements plus disagreements then multiplying by 100 (Hersen & Barlow, 1976). Agreement was defined as both observers scoring the same code for correct and incorrect responses. The mean interobserver reliability score was 90%, and reliability scores ranged from 75% to 100%.

Summary

Overall daily percentage data showed a variable but significant increase in the percentage of mean correct responses per day, after day 48. Data presented on the Standard Behavior Chart indicated accelerations for both the number of correct responses per minute and speed of responding in all meals. Variability of correct responses was evident in all meals with breakfast having the most and supper the least.

Assessing performance when a variety of foods were presented indicated no significant difference between the mean percentage of correct responses between variety and institutional foods. The mean interobserver reliability agreement score recorded was 90%.

Chapter 5

Discussion

Review of Results

This study was undertaken to evaluate the effectiveness of empirically successful training methodology (Azrin & Armstrong, 1972; Stimbert et al., 1977) in teaching self feeding skills to a profoundly retarded young woman who had a long history of no progress in a traditional institutional feeding program. Although criterion of mastery had not been reached at culmination of this study, results showed variable but steady progress in percentage and rate of correct responding once the manual guidance had been faded out and the subject was responding with only verbal and gestural prompts. All celerations, or rates of learning, on the Standard Behavior Chart were in the increasing direction including rate of correct responses and speed of responding. These data demonstrate that not only were the rate of correct responses increasing, but also the speed with which they were performed.

The highest rate of celeration and the largest amount of variability were recorded at the breakfast meal. The data reveal that the higher rate of celeration at breakfast is attributable to much poorer performance in the first half of the study compared to the first halves of lunch and supper. Although the celeration for supper resulted in the least amount of improvement, this was the

subject's best meal. The high initial rate of correct responding and low amount of variability remained stable throughout training.

In response to arguments by Ellis (1982) that intensive training can become aversive and harrassing to subjects, the subject's social behavior seemed to improve with training. A review of videotapes used to ensure trainer consistency, demonstrated a significant increase in the number of smiles and vocalizations during the final tapes compared to tapes of initial training sessions.

Variability

Several uncontrollable confounding variables may have attributed to the high degree of variability at all meals, especially breakfast. For example, this subject suffered from infrequent but severe seizures. These were partially controlled by administering 90 mgs of phenobarbital immediately before bedtime, which seemed to cause the subject to be extremely drowsy at breakfast. Initially, the breakfast training session took place at 7:00 a.m., shortly after she had been awakened and before her morning bath. It was decided on Day 30 that in an effort to increase the subject's attentiveness at breakfast, the two morning meals would be combined and given between 8:00 a.m. and 8:30 a.m., after she had received her bath. Although no correct responses were recorded, an increase in her attentiveness and performance was noted at all meals. Nine days later the subject was returned to

her normal feeding schedule of three meals per day and after one week on this schedule, the first correct response was observed.

During week ten (Days 73-80), the staff noticed and reported the subject as having had two mild seizures. Due to the potential severity of her seizures, medical staff increased the subject's phenobarbital dosage from 90 mgs to 120 mgs. About one week later trainers noticed a return to the drowsiness at breakfast and a general lack of hunger at all meals. At this time an overcorrection procedure consisting of ten vigorous practice dips contingent upon no subject response was implemented to attempt to increase responding. Unfortunately, the typography of the overcorrection was so close to her favorite play behavior (hand and arm shaking) that she laughed and seemed to enjoy what was designed to be a mildly aversive consequence. The overcorrection procedure had no noticeable affect on the subject's performance.

One week later 13 of 20 clients in the subject's ward were reported to have flu virus and the ward was quarantined for several days. Although she exhibited no outward symptoms such as vomiting and temperature, trainers had never observed a lack of hunger in the subject previously. It was decided to continue training under the premise that she was suffering from the flu, and effects from her medication change. Shortly after, as the data indicate, the subject's performance improved to previous levels and continued to increase steadily, with much less variability than had previously been noted.

Comparison of the Subject's Methodology to Empirically Successful Methodology

In identifying empirically successful feeding technology, methodologies by Azrin and Armstrong (1973) and Stimbert et al. (1977) were selected for use in this study. Prior to and throughout the training procedure, decisions were made to modify these methodologies to fit this individual subject and situation.

The subject selected for inclusion in this study had a long history of staff dependence. Every effort was made to force the subject to perform as much of the eating response as possible to receive the reinforcer. These changes consisted of altering the manual guidance procedure to only include the dipping response, and the use of adaptive devices to facilitate learning without requiring staff intervention. Because of the many training techniques employed in this study, it was impossible to isolate the effectiveness of the individual modifications in the methodology.

Another deviation from empirically successful procedures was the return to a three meal a day schedule before acquisition of the target behavior was complete. This decision, based on eliminating inactivity at the breakfast meal, resulted in improved attentiveness and performance across all meals. These findings are consistent with the methodology of Stimbert et al. (1977) who, because of satiation in lower functioning residents, also reduced the number of meals in their program before reaching criterion.

Time Spent in Training

Time spent in training during this study was 122 days, for a total of 187 training hours, without the subject reaching criterion of mastery. This compares unfavorably with the results of the Azrin and Armstrong (1973) and Stimbert et al. (1977) studies on which the present methodology was based. Two factors specific to the subject selected may account for the increased training time.

Unlike the Azrin and Armstrong (1973) and Stimbert et al. (1977) studies, the subject chosen for inclusion in this study was selected based on a very low functioning level, multiple handicaps and a long history of poor progress in an institutional feeding program. Specific attention was placed on including a subject with a long history of poor progress in an institutional feeding program. Secondly, a closer look at the literature and the history of the subject used in this study demonstrates what appear to be some interesting correlations between the subject's performance in the present study and a phenomenon labeled "learned helplessness" (Overmeier & Seligman, 1967).

The concept of learned helplessness, first mentioned and observed in the animal literature, has been documented in human subjects including the institutionalized mentally retarded (Devillis, 1977; Floor & Rosen, 1975). Seligman (1975) has suggested that with individuals in custodial facilities, failure to acquire behavior might be brought about by a conditioned response pattern he described as "learned helplessness". In addition,

Seligman (1975), after an extensive review of the literature on learned helplessness, reported several consistencies which emerged from his review.

1. Cause. An inability by the individual to exert control over environmental events, particularly aversive events.

2. Symptoms. The individual exhibits low levels of initiation of voluntary responding, difficulty learning that specific responses produce specific outcomes, and lower levels of aggressive behaviors.

The subject was completely dependent on staff for the maintenance of all basic skills. She was nonambulatory and nonverbal which severely restricted her ability to explore the environment, and also suffered from severe seizures, a form of noncontingent aversive stimulation (DeVillis, 1977). Her feeding history showed 13 1/2 years of being spoon fed and 2 1/2 years in an institutional feeding program. Owing to the inadequacies of the subject's institutional program, no opportunity existed for her to exert even minimal control over her feeding behavior.

Several factors surfaced during the course of this study that seem to be related to learned helplessness in the subject: (a) during the baseline condition, she made no attempt to consume any food presented, (b) the introduction of a variety of novel foods had no significant effect on the subject's performance, and (c) if the social reinforcement was delivered during the process of bringing the food to her mouth, she consistently stopped the response at that point until she was physically prompted to eat the

food. These factors suggest that the food was not functioning as a reinforcer.

This suggests that the improvement in the subject's feeding behavior was maintained by trainer reinforcement. If this was the case, it indicates that a milder form but equally dependent behavior was being exhibited by the subject.

Implications for Future Research

Intensive treatment. This study was only able to provide anecdotal data in response to the argument by professionals (Ellis, 1981) that intensive training is aversive to participants. Further research is necessary to objectively and empirically measure the pleasantness/unpleasantness of intensive training methods.

The focus of this study was on teaching self feeding behavior to a profoundly retarded young woman. Continued study should be directed toward identifying and evaluating the most successful techniques for generalizing the modifications necessary in intensive training back to normal settings and schedules.

Learned helplessness. Due to the considerable amount of time the subject has spent in training and what appear to be some correlations with "learned helplessness", future research efforts could possibly attempt to identify variables that may have contributed to this subject's poor performance. Future studies may want to focus on behaviorally identifying the specific environmental conditions that prohibit profoundly retarded persons from building a repertoire of functional skills. By manipulating

these environmental variables so that subjects can exert some control over positive reinforcing events within their daily regime, intensive training may be enhanced and thus become more effective.

Implications to the Practitioner

Several factors have been paramount to the success of the methodology employed in this study:

1. Consistency of training. Initially, the subject received training 35 times per week. Once meals were reduced to three per day, training sessions took place 21 times per week. Of the 122 days covered by this study, only one meal was missed due to dental work required by the subject.

2. Systematic fading of manual guidance. To ensure consistency of trainer guidance during the present study, trainers regularly discussed and observed levels of prompts used by other trainers. Videotapes, taken periodically of all trainers, were compared and evaluated to ensure consistency of prompting procedures.

3. Positive reinforcement. The methodology in this study required lavish verbal and social reinforcement immediately following desired responses from the subject. Play periods followed each meal to make training as pleasant as possible.

4. Data collection and evaluation. Data were graphed regularly and frequent evaluations of progress were conducted. Based on this data, instructional strategies were revised and implemented when necessary. The main data collection system, the

Standard Behavior Chart, was selected for use because of its sensitivity to fluctuations in daily performance.

In addition, the necessity of modifying empirically successful methodology to fit the individual needs of the subject was critical to the progress reported. Finally, the enthusiasm, time, and energy necessary for the proper implementation of this study was at times both exhilirating and frustrating. The variability demonstrated in the data provided times of optimism and pessimism. It is essential that trainers be able to maintain high levels of professional behavior through positive and negative fluctuations in the data.

The importance of maintaining consistency of training procedures cannot be overstated. If for some reason a meal cannot be trained by someone familiar with the specific training procedures, the subject should be spoon fed. This will change the physical characteristics of the behavior and eliminate the opportunity for the subject to be reinforced for poor or incorrect performance.

Conclusion

Although the subject did not reach criterion of mastery, this study demonstrated that a subject with a previous history of no progress in a traditional feeding program could indeed make substantial progress toward independent self-feeding using empirically successful methodology. Through anecdotal reports it was noted that, contrary to the belief of some professionals,

intensive training techniques should not be presumed to be aversive. Most importantly it raises the question: Is the lack of progress in this individual created by the inadequacies of the environment or training programs she has been provided? If attaching the stigma of untrainability to individuals, based on progress in poorly designed programs, what implications does this present for the future of the profoundly retarded? Institutions can return to the philosophy of custodial care or can exhaust all efforts to develop available environments and training methodologies that will enhance the learning potential of each individual regardless of severity of handicap and level of functioning.

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APPENDIX A

Training Manual for Self-Feeding Program

TRAINING MANUAL
FOR
SELF FEEDING PROGRAM

Sue Thompson
Gary Ulicny

Western Carolina Center

October 1982

TRAINING MANUAL FOR SELF-FEEDING PROGRAM

This feeding program has been demonstrated to be effective with severely and profoundly retarded individuals. One of the keys to its success is consistency, so you as a trainer should be familiar with the procedures to ensure that your efforts are consistent with those of your fellow trainers.

PROCEDURE

Mini Meals

To provide more opportunities for learning the three daily meals are divided into five "mini meals", 2-2½ hours apart from 7:00 a.m. to 5:00 p.m., daily. All meals will be terminated when all food is consumed.

No Distractions

Training is conducted in a quiet room with only the client, trainer and observer present to minimize the outside distractions.

Commencement of Session

All sessions will begin with the client seated and the food and utensil placed in front of the client, on a non-slip mat. Training will be limited to the appropriate use of only one utensil (spoon) and a cup.

RESPONSE DEFINITIONS

Correct Response

This is defined as independent transfer (requiring only a verbal prompt) of food from the tray to the mouth with hands, spoon or glass, as appropriate.

Incorrect Response (Error)

This is defined as any attempt to move food from plate to mouth by incorrect use of hands, utensils or by attempts which require physical assistance to complete them.

Inappropriate Response

This is defined as any disruptive behavior incompatible with training procedures, e.g. screaming, spitting, throwing food, dribbling food out of mouth.

Data Collection

During each session, frequency of correct, incorrect and inappropriate responses will be recorded. In addition, type and amount of food eaten, length of training session and number of timeouts and overcorrections will be noted.

Manual Guidance and Positive Practice

Aid client in picking up spoon. Initially hand on hand guidance is used to aid the client in completing only the scooping response. The trainer should allow the client to drop the spoon to the plate, then give the command "dip". If the client does not initiate movement within three seconds, the trainer will physically guide the client through only the scooping motion.

In response to pressure cues from the client, location of guidance will be gradually shifted from hand on hand to two fingers on client's hand to one finger to touch and finally to the verbal cue "dip".

Time Out

This is defined as the withdrawal of the food by removing the plate/dish for 30 seconds contingent on an inappropriate response or noncompliance in positive practice. After 30 seconds if the client is still engaged in inappropriate behavior, the food will not be replaced until that behavior ceases for 5 seconds.

During time out, the trainer refrains from any physical or verbal interaction with the client. When tray is returned, the trainer should begin again with the initial cue, "Dip".

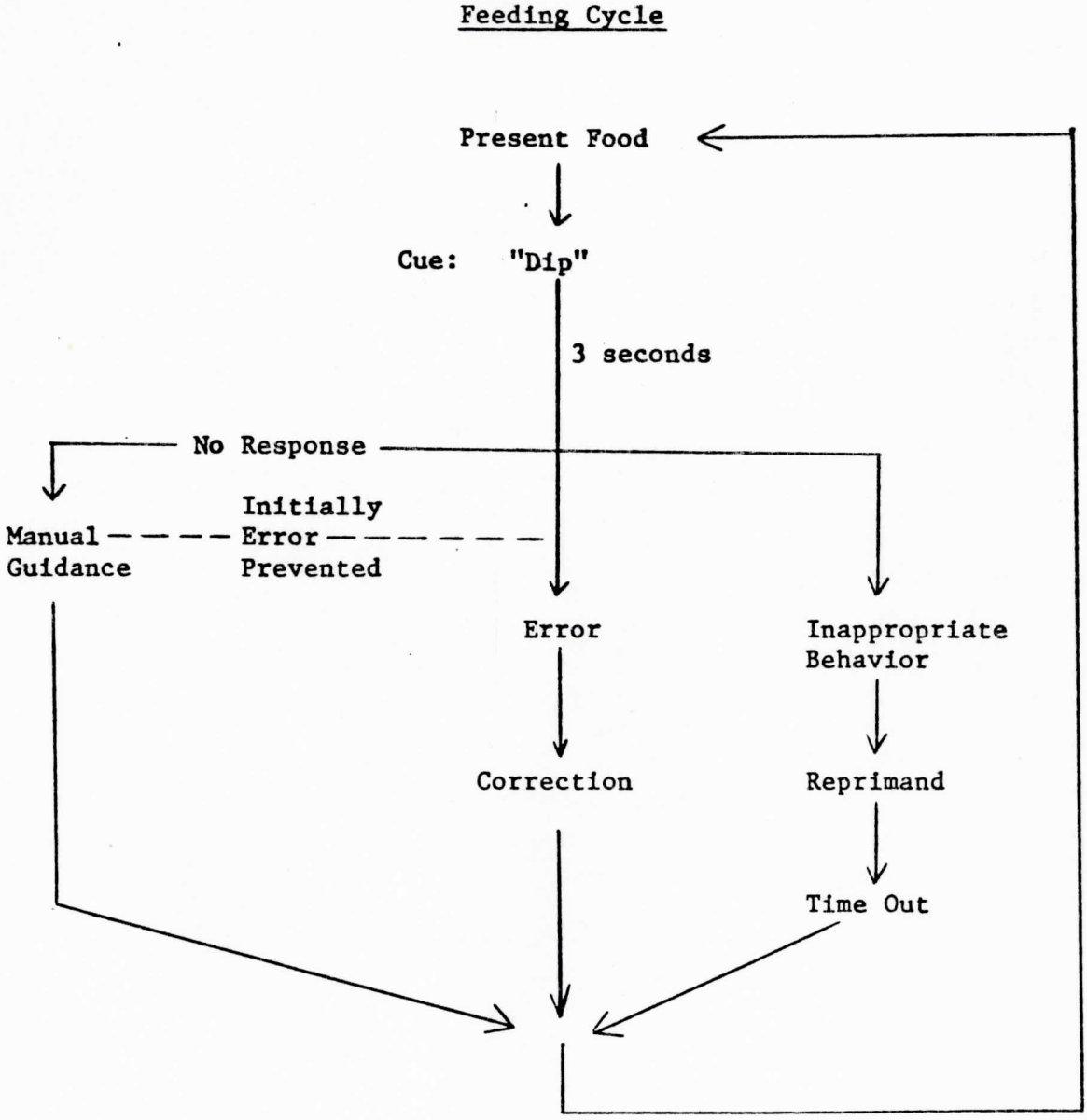
Continuous Reinforcement

The trainer should provide generous verbal and physical (hugs, stroking) reinforcement for all client initiated attempts at self-feeding. To ensure that the training session is reinforcing and to increase the client's receptive language for the skill he/she is learning, continuous talking should occur throughout the session. The trainer should describe pleasantly what is going on, give generous praise for appropriate behavior and made every effort to ensure the training is as enjoyable as possible. A brief play period will follow each session, in which the client responds appropriately.

Criterion for Discontinuation of Program

Training will continue until the client reaches his/her proposed goal as set out in individual program. This will be scoring 90% correct responses over three consecutive meals.

SPECIFIC TRAINING PROCEDURES



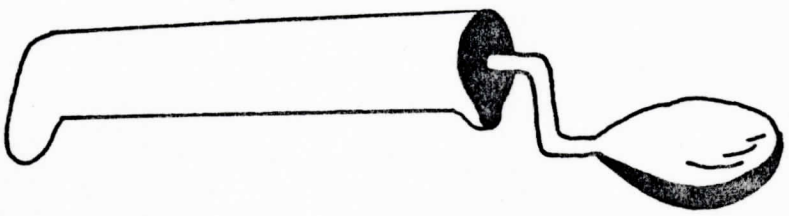
SAMPLE DATA SHEET

Name of Client: _____

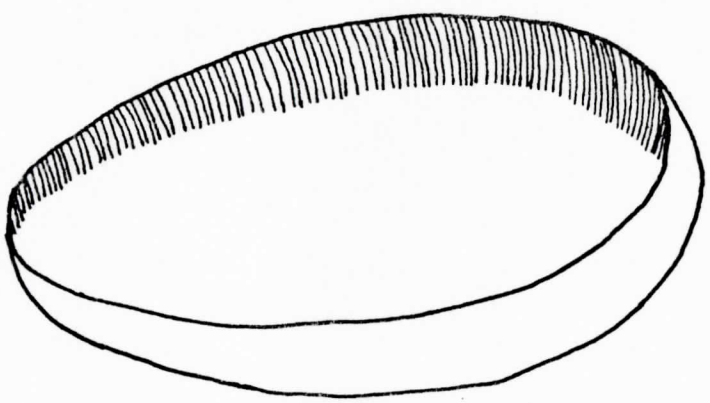
Sessions	Trainer	# of Correct Responses	Least Prompt	Length of Session	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

APPENDIX B

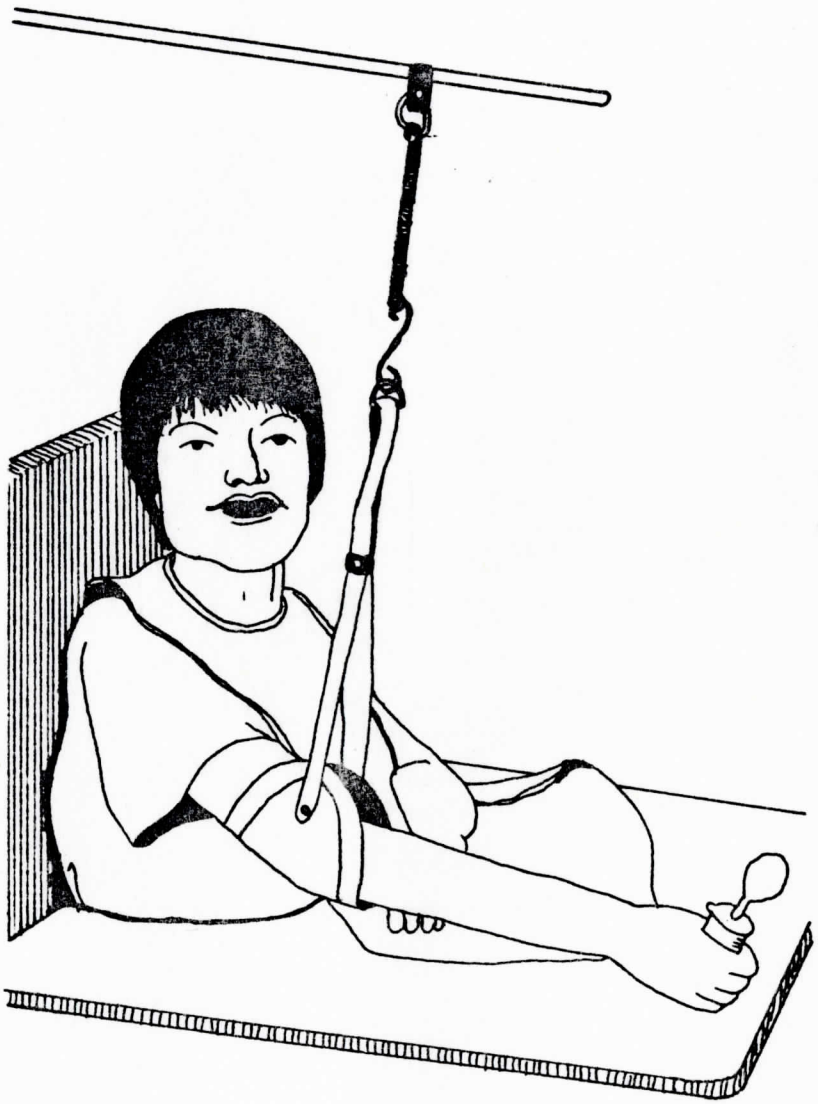
Adaptive Devices



Swivel Spoon



Scoop Dish



Arm Sling

VITA

Gary Ronald Ulicny was born in Youngstown, Ohio, on May 16, 1952. He attended elementary schools in that city and graduated from Austintown Fitch High School in June, 1970. The following September, entered The University of North Carolina - Chapel Hill, and in June, 1974, he received a Bachelor of Science degree in Special Education.

In 1981, he accepted a graduate assistantship at Appalachian State University and began study toward a Master's degree. This degre was awarded in 1983 in the field of Special Education with an emphasis on teaching the severely handicapped.

The author is a member of The Association for the Severely Handicapped and the Association for Behavior Analysis.

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