

THE UNIVERSITY OF MANITOBA

THE EFFECT OF CO-OPERATION PROCEDURES ON THE ACQUISITION  
AND SUBSEQUENT GENERALIZATION OF A SIGN LANGUAGE COMMUNICATION  
REPERTOIRE IN SEVERELY AND PROFOUNDLY RETARDED GIRLS

by

LARRY WILLIAMS

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wise reproduced without the author's written permission.

This Thesis is dedicated to my first and most important teacher, my father, for it was his instruction on the notion of "responsibility", and his modeling of patience, perseverance, and honest hard work, which formed my values and maintained my motivation when there was no end in sight.

## Abstract

Three experiments were conducted concerning the acquisition and generalization of a minimal sign language manding repertoire in four non-verbal severely and profoundly retarded adolescent females. In Experiment One, four adolescents were taught to cooperate on a device to earn music and candy reinforcement by responding on three pairs of tasks during separate "mini-sessions". These adolescents, in two dyads, were then taught manual signs relating to the "music machine" behaviors by a variety of procedures which differed in the degree of prompting involved in the teaching, but all of which were of a cooperative nature in that two subjects interacted expressively and receptively under an adult experimenter's "teacher" control. In general, learned signs occurred on the music machine during training sessions and later in probe sessions largely as a result of the presence of or prompting via headphones by the experimenter.

In Experiment Two the same four subjects were taught to sign to mand four mealtime items in individual pre-lunch sessions taught by individual experimenters. Generalization of learned signs was observed to a dining room situation in the presence of the teachers and to adults not present during training. Mealtime signs were acquired quicker and generalized more readily than the signs in Experiment One. Additionally, receptive responses to manded signs were observed in two subjects although never taught.

Experiment Three attempted to teach the same four subjects two signs as mands for obvious reinforcers and two signs as mands for the "behavior of a listener" which was associated with reinforcement for both subjects. This was done in order to ascertain the importance of sign selection for teaching signed mands. Also, for each pair of subjects, one of each pair of signs was taught individually and one was taught with a partner present. Receptive response training was superimposed over all procedures in a staggered fashion. Generalization of peer-peer signs

was monitored in the music machine situation as in Experiment One. The major finding was that subjects manded each other in the music machine situation for both "types" of signs as a function of a contingency which removed the possibility of all other types of responses from gaining reinforcement. Also, most signs were observed as in Experiment One, when the experimenter was present in the game situation. The presence of other adults did not have this control over signing. Generalization was also observed to new partners as a function of the experimenter's presence.

The findings of all three experiments are discussed with a focus on audience control, and the necessity of teaching receptive versus expressive responses, for the development of a manding repertoire. Guidelines for plausible application of the findings are then given.

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## INTRODUCTION

During the past decade, an active area of applied behavior analysis has been in the research and development of procedures for teaching language behavior to the non-verbal retarded population (e.g., Harris, 1975; Sloane & McAully, 1968; Kent, 1974; Garcia & De Haven, 1974; Schiefelbusch & Lloyd, 1974). Within this general framework, there have been flurries of activity concerned with several very specific theoretical and procedural issues, some of which are: the role of imitation in language acquisition (e.g., Lovaas, Berberich, Perloff & Schaeffer, 1966; Lovaas, 1973; Baer & Sherman, 1964; Baer, Peterson & Sherman, 1967); the role of receptive versus expressive components of language (Bricker & Bricker, 1970, 1973); and, the development of "functional" language (Guess, Sailor, Rutherford & Baer, 1968; Guess, 1969; Sailor, 1971; Staats, 1968; Haveland, 1972; Frisch & Schumaker, 1974; Premack, 1970, 1971). Most recently, researchers have investigated other forms of verbal behavior such as sign language and "plastic" language communication (Topper, 1975; Webster, Solomon, Evans & Kuchan, 1973; Fouts, 1972, 1973; Miller & Miller, 1973). The advent of non-vocal communication research has provided both a fresh outlook and a prompt for a new analysis of the language acquisition process and its development to "functional language" (cf. Premack, 1970, 1971).

Within the language training area of applied behavior analysis the investigation of effective procedures which will promote generalization of taught verbal behavior is still very much needed (Harris, 1975). Some research on generalization of learned verbal behavior has focused

on the utilization of established procedures for acquisition (e.g., imitation) and the manipulation of variables such as: number of teaching settings (Hartung, 1970; Griffith & Craighead, 1972; Rubin & Stolz, 1974); number of experimenters (Garcia, 1974); response classes (Frisch & Schumaker, 1974); mode of stimulus presentation (Lovaas, Schriebman, Koegel & Rehm, 1971; Cuttings, 1973); and, the relevance of the current institutional "verbal" environment to the language acquisition process (Veigt, Steven, Allen & Chinsky, 1976; Giles, 1971). Concurrently, many articles in mental retardation journals discussing language deficiencies in this population have appealed for formulations which would involve the child at the child's present communication level and which would relate most to the child's present motivation during the normal daily routine (Leff, 1968).

A review of the relevant literature indicates that the general task of teaching verbal behavior to institutionalized retardates has been attempted at different levels of complexity and from a variety of theoretical analyses of language acquisition (Schiefelbusch & Lloyd, 1974). Operant researchers have been successful at establishing minimal verbal repertoires of varying degrees of topography, under a variety of environmental situations, by a variety of procedures with individuals with no verbal behavior. Concurrently, other researchers of the operant orientation have produced closer approximations to normal language in those who already had some verbal repertoire to begin with. While research of the first variety has uncovered variables and stimulated "theories" of the basic language acquisition process, researchers of the latter variety (cf. Staats, 1976; Lloyd & Schiefelbusch, 1974) have focused their efforts primarily at grammatical structure. These researchers have only recently succeeded in escaping the earlier

' literature war' with the more traditional modern linguistic theorists (Chomsky, 1959), whose interests have been more on the structure rather than the function of language.

Research is needed which would provide information on language training which promotes the generalization of learned verbal behavior to the "natural environment" (Harris, 1975). More specifically, for the non-verbal institutionalized retarded, there is a need for more research concerning the establishment of verbal behavior in the natural environment where it will be most functional. However, progress has been made in the investigation of a variety of procedures for establishing simple language behaviors (both vocal and non-vocal) in a variety of "classroom" situations. The most popular procedures have involved the establishment of verbal behavior as an imitation repertoire. Also, much of the reported research has described the establishment of receptive behavior (i.e. the appropriate responses to a teacher's verbal behavior) as opposed to expressive verbal behavior (i.e. the production of verbal behavior). The literature also shows that: a) major problems exist in generalizing verbal behavior learned as imitation in the classroom to spontaneous verbal behavior emitted in the daily environment. b) research is needed concerning the specific variables for teaching what is called 'functional' verbal behavior in the non-verbal person's daily environment (Harris 1975; Schiefelbusch, 1965).

One way to promote verbal behaviors might be to establish useful non-vocal behavior first. Even if no vocal behavior ever occurs, social and self-care behaviors would likely benefit from such a repertoire. The recent literature has supported this notion (Miller and Miller, 1973). However, research on the programming of generalization of non-vocal verbal behavior is still needed. The few anecdotal case studies that do claim to have produced expressive spontaneous signing have indicated the benefits to be gained from teaching in the natural environment (Topper, 1975). Those more rigorous experiments teaching non-vocal verbal behaviors to chimpanzees (Fouts, 1972; Premack, 1971) have stressed the functionality of the repertoire.