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## THE ACQUISITION OF A FUNCTIONAL VOCABULARY IN SEVERELY DISABLED CHILDREN USING SYSTEMATIC SIGN LANGUAGE INSTRUCTION

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### Introduction

Over the decades, most severely disabled children have been the recipients of care in addition to that provided by their families; either institutional or educational or both. From the research of Spitz and Spitz in the early 1900's to the present day work of Gold there has been a commitment to improving the life circumstances of severely disabled persons by improving the care they receive. The work of the late Marc Gold has been of particular interest to many persons because of the success he had in training severely disabled persons to do task assembly work (Gold, 1973).

In 1978, Gold and Rittenhouse published a paper suggesting that, indeed, the acquisition of functional language might be within the reach of those children and adolescents for whom caretakers and others held little hope. Their suggestion was that a functional vocabulary could be taught to severely disabled children by applying task-analytic procedures to the signed vocabulary and the teaching of it. Their argument was that a visual-tactile system taught in a systematic way may lead to the acquisition of a functional vocabulary in children who had not acquired one when speech-only techniques had been used. The study which follows was a testing of that hypothesis.

### Review of the Literature

Theoretical positions related to the origins and development of language have created a great deal of controversy. In fact, depending on the particular bias held by an individual, language is often defined by what it is not, rather than what it is. Reconsideration of existing theories has provided a few practical benefits for severely retarded individuals (Morréau, 1982). The literature on language in men-

tally retarded children has focused on their ability to use it to mediate environmental data. In other words, researchers have been interested in how and how well mentally retarded children use language to organize information and solve problems and not the acquisition of it (Rittenhouse, in press).

Severely-disabled children may have already categorized many sensory images before useful symbols have been attached. For example, a child may have grouped several alternative beverages before associating them all with the word "drink". Moreover, severely retarded children more rapidly acquire communicative responses and produce more novel responses if meaningful objects and events from the natural environment are used as stimuli (Spiegel, in press). Such an environmental influence on language acquisition in retarded children has been identified as operating in the normal process of acquiring the first language in young, non-handicapped children (Nelson, 1973). She found, for example, that 51% of the words that constituted the first vocabulary were of things common to the child.

Studies which have focused on the acquisition of knowledge through a signed system of communication in non-deaf children suggest that signing, in and of itself, will not lead to acquisition. Bricker (1972) found that one group of severely retarded children would significantly outperform another group on a word-object association task only after the sign and the actual object were paired.

### Problems

The formational parameters of Sign, namely the shape of the hand, its location in space or

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on the body, and the motion involved seem to be of cognitive importance. Bellugi and Klima (1972) found that when deaf children who used sign language made recall errors, the errors were a function of sign formational confusion and not some other linguistic variable such as the phonology of the stimulus word. *Kiss* would be mis-remembered as *home*; not *miss*. These parameters have not been considered of importance in those studies that have focused on the acquisition of words by severely-disabled children. The study described in the next section preserved these parameters by task-analyzing the sign-words which made up the target vocabulary.

**The Study Design**

A functional vocabulary was used as the target language (Rittenhouse and Myers, 1983). Ten severely-disabled children and youth ranging in age from 9 years, 4 months to 19 years, five months participated in the study. Seven of the children were females and three of them were males. They resided at a private, year-around, residential school where they had been students for periods of from 1 month to 13 years, 3 months. Table 1 shows personal characteristics of the subjects.

The children were taught sign vocabulary words from the list of target functional words in one-half hour sessions per week over a 6 week period. Real objects were used to introduce vocabulary and pictures were substituted for them to determine the strength of acquisition. For words to be considered acquired, a child had to be able to identify the object and a picture of it using a systematic task-analytic procedure (Rittenhouse and Myers, 1983).

The independent variables in the gross analysis of the data were age, degree of disability, and amount of residential time in the school-cottage environment. No statistical analyses of the data were performed because of the small number of subjects who participated in the study and because statistical significance on comparisons would have been insensitive to apparent relationships and possible trends suggested through individual data descriptions.

**TABLE 1**  
**Personal Characteristics of the Subjects**  
**Including Sex, Age, Primary Disability**  
**and Years in School**  
**Individually and Collectively**

S	S	Age: Y/M	Primary Disability	Yrs. Sch.
A	F	12.10	Retardation/deaf-blindness	9.0 6.4
B	F	11.6	Retardation/blindness	6.4
C	F	19.5	Retardation/blindness	13.3
D	F	12.2	Retardation/emotional disturbance	1.4 1.4
E	M	9.4	Retardation/deaf-children	6mos
F	M	15.2	Retardation/deaf	1mo.
G	F	14.7	Retardation/blind	5.7
H	F	14.10	Retardation	2.8
I	M	19.5	Retardation/emotional disturbance	4.6
J	F	13.0	Retardation/deaf	2.10

N = 10      7 F - 3 M      ave. age = 14.3      x = 4.7

**Results and Discussion**

Table 2 shows a functional intelligence rank-ordering of the subjects from least functionally intelligent (1) to most functionally intelligent (10) and a rank ordering on acquisition performance from low-vocabulary acquisition (1) to high-vocabulary acquisition (10). Ten teachers and other staff familiar with each subject were asked to compare the children one to another on the basis of some perception of gross functional intelligence. There was near unanimous agreement among the raters regarding the relative functional intelligence of the subjects and no marked rater difference on any child. The number of sign words acquired by each child varied from 200 signs by the top performers to no signs by the two poorest performers. Six of the subjects acquired fewer than ten sign words and only one of the nine most disabled students acquired more than 10 sign words (Subject E, Table 2).

Seven of the ten subjects of this study had shown no real interest in using meaningful language. Of the three subjects who were using meaningful language, two were the most capable subjects (Subjects I and J) and one of them was Subject E who was the youngest of the ten subjects (9 years, 4 months) and who acquired more than ten signs during the course of the study.

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**TABLE 2**

**A Rank-Ordering of Subjects by  
Relative Functional Intelligence From Least  
Intelligent (1) to Most Intelligent (10),  
Their Age, Years of Schooling, Number of  
Signs Acquired and Their Vocabulary Ranking  
from Best (10) to Poorest (1)**

	Rank by Intelli- Sub. gence	Age: Y&M	Yrs. Sch.	#Signs Acquired	Voc. Rank
A	1	12.10	9.0	0	1
B	2	11.6	6.4	9	2
C	3	19.5	13.3	2	4
D	4	12.2	1.4	4	6
E	5	9.4	6 mos.	50	9
F	6	15.2	1 mo.	10	7
G	7	14.7	5.7	0	5
H	8	14.10	2.8	2	3
I	9	19.5	4.6	10	8
J	10	13.0	2.10	200	10

The three most disabled subjects (Subjects A, B, C) have been at the residential school an average of 7 years, 3 months. Two of the three most functionally intelligent subjects (I and J) were among the three top performers. Subject E who was perceived by the raters as having relative average functional intelligence, was the youngest, had been at the school 6 months, and was one of the better performers, having acquired 50 sign-words during the course of the study.

The results of this study suggest that the systematic use of signing with severely disabled children as a way of teaching a functional

vocabulary should be considered as an instructional system, although the data are far from conclusive. Six of the 10 subjects acquired fewer than 10 sign words, although only 2 of them failed to acquire any sign-words. Three of the top performers exhibited an awareness of language and an interest in using it prior to the study. One of these subjects was perceived as more functionally disabled than 5 of the 10 subjects, three of whom acquired fewer than 10 sign-words.

One tentative conclusion which one may draw from the data is that systematic signing as a means to teach functional vocabulary words to severely-disabled children holds promise, particularly when the children show an interest in communicating.

#### Summary

Ten children and adolescents who are severely-disabled participated in this study. The study focused on the acquisition of a functional vocabulary by the children when instruction was provided through systematic sign instruction (Rittenhouse and Myers, 1983). Eight of the 10 subjects acquired one or more signs and four of them acquired 10 or more sign words. The conclusion drawn from the data, while tentative, is that systematic sign instruction with severely-disabled children who have shown little or no previous interest in communicating holds promise, although some previously exhibited interest in meaningful communication is better than none at all.

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