

FACILITATING SPONTANEOUS SPEECH IN MENTALLY RETARDED ADOLESCENTS

by

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ABSTRACT

Hubbell (1977) postulated that spontaneous speech from non-verbal patients can be increased by using facilitating verbal techniques such as modeling and expansion while minimizing inhibiting verbal techniques such as commands and directions. This study investigated Hubbell's hypothesis using varying ratios of facilitating vs. inhibiting verbal techniques to elicit spontaneous speech from twelve mentally retarded adolescents with similar intellectual abilities. Each subject was seen individually for two baseline and three experimental sessions. Three different measurements of verbal output were obtained: number of elicited utterances, number of different nouns used, and a modified DSS score based on the DSA (Lee, 1974). The results did not support Hubbell's contention that facilitating techniques would increase spontaneous speech. Our results indicated that both facilitating and inhibiting techniques significantly increased verbal output equally in our subjects. These results are discussed in terms of the potential usefulness of these various techniques in language training programs for the mentally retarded and other non-verbal children.

The distinction between the "amount which" and the "skill with which" language is used becomes of ultimate importance to the speech pathologist when he or she begins to work with the language impaired child. Many speech pathologists are familiar with the child whose communication is impaired because his or her phonetic, syntactic or semantic communicative skills are impaired. Equally important but perhaps less familiar to the clinician is the child who although he can apparently speak adequately in terms of syntax and phonology, does not. Examples of this silent type of child can be seen in the emotionally disturbed or the autistic child who frequently exhibits adequate linguistic skills but is not willing or able to interact socially via a verbal mode. Another more common example of a silent type of child who is both grammatically delayed and generally non-verbal is the mentally retarded child. While there are many programs that help facilitate syntactic development in mentally retarded children, little data exists on programs designed to increase verbal output. Any teacher who has worked with mentally retarded children will attest to the importance of an adequate amount of verbal output in order for learning to occur in these children.

Hubbell (1977) is one of the few researchers who directly addresses this question; that is, "what facilitates spontaneous speech in children?" Hubbell began his research with the premise that spontaneous speech is generally the ultimate goal in language therapy. From this premise, Hubbell reviewed the data of various other researchers who have studied how clinicians or teachers could facilitate spontaneous speech in children. Hubbell indicated that many of the traditional methods of inducing the non-verbal child to talk, such as questions, commands, directives, and praise, actually act to constrain children's speech. He hypothesized that if the teacher/clinician would increase the amount of facilitating statements (i.e. models and expansion) while working with the non-verbal child, the verbal output (i.e. spontaneous speech) of the child would increase. Hubbell pointed out that while it would be impossible for the teacher or clinician to completely eliminate inhibiting statements from a therapeutic interaction, the clinician

could and should reduce the proportion of inhibiting statements as much as possible and increase facilitating statements.

Three studies that exemplify the use of facilitating techniques in teaching language are by Cazden (1972); Marshall, Hegrenes, and Goldstein (1973); Seitz and Hoekenge (1974). Cazden's (1972) classic study was designed to determine whether expansion (example — child, doggie bite, therapist — Yes, the doggie is biting) would be more effective than extension (example — child, doggie bark, therapist — Yes, but he won't bite) in developing linguistic skills. Note that according to Hubbell (1977), both techniques would be facilitating in nature. Twelve black children who were assumed to be linguistically deprived were randomly assigned to one of three groups; one control and two experimental. One experimental group was exposed to thirty minutes of expansions per day for three months, while the other experimental group was exposed to thirty minutes of extensions per day for three months. While all three groups improved, Cazden found no significant difference in the improvement of linguistic skills of children exposed to either the expansion or extension techniques. Cazden suggested a number of possible explanations for the results. One was that expansions and extensions were separated in a linguistically unnatural manner during the sessions. Cazden also indicated that looking only at the effects of extension and expansion on syntactic structures may have been too narrow a viewpoint. As both were facilitating techniques, this point may indeed have been a significant factor in the outcome of the Cazden study.

Marshall, Hegrenes, and Goldstein (1973) designed another type of language study to determine the types of verbal interactions that occurred between mothers and their retarded children, and mothers and their non-retarded children. Twenty children in each group were matched on the basis of chronological age. Marshall, Hegrenes, and Goldstein found that mothers of retarded children use more commands, demands, requests, and questions than the mothers of non-retarded children. These commands, demands, requests, and questions reportedly elicited more non-verbal responses from the children, and the researchers posed a question regarding the frequency of use of these inhibiting of verbal behaviours by mothers:

“. . . if mothers change this frequency of their intraverbal output, can this increase the child's functional communication?" (p. 419)

Another set of researchers did attempt to determine if the mean length of utterance of mentally retarded children could be increased with parental training in the use of modeling techniques. Seitz and Hoekenge (1974) tried to discover if the language output of retarded children could be increased, in terms of mean length of utterance, if their parents were given observation and training in the use of modeling techniques. Four pairs of children and parents were used in this study. The children were seen for eight weeks, three times per week with the final two weeks (six sessions) being conducted by the parents. Seitz and Hoekenge report that all the children's mean length of utterance (MLUs) increased and that seventy five percent of the children increased their number of utterances. The parent's verbal behaviors were also observed to change, and Seitz and Hoekenge concluded that these changes resulted in increased length and number of verbal interactions between parents and children.

The second type of language therapy programmes may be a bit more familiar to those teacher/clinicians working with retarded or nonverbal children. Such programs, designed by Miller and Yoder (1972), Gray and Ryan (1973), Fokes (1976), and Laura Lee (1975), all utilize the supposedly inhibiting techniques such as questions, commands, and requests which tend to elicit categorical linguistic responses. In this type of program the clinician/teacher provides the linguistic stimulus to which the child must respond appropriately. Reinforcement follows appropriate responses. All of these programs have proven themselves valuable tools in helping to teach specific syntactic structures and, in some limited cases, semantic relationships of language to the non-verbal child. But if the ultimate goal of language therapy is to increase the child's spontaneous speech as Hubbell suggests, one may question the usefulness of these programs because of the

abundant use of questions, commands, and requests that supposedly inhibit spontaneous speech.

While little hard evidence was provided, researchers such as Hubbell (1977), Marshall et al (1973), and Cazden (1972) all suggest that increased use of techniques such as modeling, expansion, and conversation should increase the amount of spontaneous speech in non-verbal children, such as the mentally retarded, while programs that utilize directives, questions, and commands (Miller and Yoder, 1972; Gray and Ryan, 1973; etc.) should limit the amount of spontaneous output from these same children.

This study was designed to determine what effect, if any, various ratios of facilitating vs. inhibiting verbal behaviors would have on the spontaneous verbal output of a group of mentally retarded adolescents. If, as Hubbell suggested, increases in the use of facilitating verbal behaviors actually does result in increased verbal output in mentally retarded children, then it would be important for the clinicians and teachers to work with these children to alter their programs when an increase in spontaneous speech is the desired goal.

METHOD

Since Seitz, and Hoekenge (1974); Marshall, Hegrenes, and Goldstein (1973); and Hubbell (1977) all refer to the value of facilitating techniques in increasing spontaneous speech of retarded children, the subjects for this study were selected from a retarded student population.

Due to school regulations, the twelve students, six males and six females, were selected for us from a population of trainable mentally retarded adolescents by the principal based on the following subject selection criteria provided by us:

- a) all subjects were to have similar intellectual abilities
- b) none of the subjects were to have diagnosed language or speech disorders
- c) all the subjects were to be relatively non-verbal, i.e. the type of subjects requested were adolescents who exhibited little spontaneous speech in either work, school, or free play situations in the school.

While these subject selection criteria were somewhat general, the principal had no trouble providing the requested subjects. While all the subjects had a Stanford Binet IQ score of 50 (plus or minus five points) and were relatively non-verbal in school situations, rarely initiating conversation on their own, there was a rather wide chronological age range from ten years to seventeen years (mean age 13.0 years). Each subject was seen a total of five times, two base rate and three experimental sessions. The first base rate session also provided the authors with an initial assessment time to determine the appropriateness of each subject for participation in this experiment.

PROCEDURE

During all five sessions, each subject was brought individually into a room and seated beside one of the researcher/clinicians at a table displaying various toys and books and a tape recorder. A five-minute speech sample taken from the middle of each recorded session was used as a basis for the language transcription and later data analysis. In order to guard against the possibility of subject familiarity with an investigator, subject/investigator sessions were alternated so that no subject was seen twice in a row by the same researcher. During the two base rate sessions, one preceding and one following the three experimental sessions, the investigators did not initiate or engage in any verbal interaction with the subject unless asked a direct question.

In the remaining three experimental sessions, each investigator initiated conversation with the subject using facilitating/inhibiting verbal behaviors in the following approximate ratios: 25% - 75% facilitating/inhibiting; 50% - 50%; and 75% - 25% facilitating/

inhibiting. Since no indication as to appropriate facilitating vs. inhibiting verbal behaviors were available from previous studies, these ratios were arbitrarily established for this study.

Table I contains the operational definitions used to clarify the experimenter's verbal behavioral interactions with the subjects. In addition, the facilitating/inhibiting verbal interaction ratios were also counterbalanced across subjects and sessions to reduce the possibility of a learning effect biasing the data. All sessions were tape recorded.

During each fifteen-minute session, each investigator kept an ongoing record of all utterances produced by themselves to ensure that the correct ratio of facilitating vs. inhibiting speech was maintained. These ratios were later verified by the authors by listening to each recorded session and scoring each utterance according to the operational definitions. These ratios never fluctuated more than plus or minus 7% from their specified session ratio. In fact, most session ratios were within 2% of the objective ratio.

Table 1
Operational Definitions

For purposes of this experiment, the following operational definitions were used:

FACILITATING STIMULI include concepts of modeling, expansion, and conversation which should increase spontaneous talking.

Modeling involves commenting upon the utterances rather than improving that utterance. An example of modeling the utterance "truck go" is "the truck has four wheels."

Expansion involves increasing and improving grammatically the length of the utterances according to the situation. In the example, "truck go", the expanded form could be "the truck is going."

Conversation includes all other clinician utterances, which are not included in any of the previous categories; such as filled pauses like "uh huh" and "is that so."

INHIBITING STIMULI include directives, questions, and praise which should constrain spontaneous talking.

Directives are those utterances produced by the clinician that instruct the child as to what he should say; such as, "say the sentence again," or "repeat this after me."

Questions are those utterances by the clinician that request specific information of the child; such as, "what did the boy do?" or "what is the dog doing?"

Praise includes those clinician utterances that are intended to reinforce or indicate approval of the child's utterance; such as, "that was really good speech" or "good, you said the whole sentence."

RESULTS

Three measures were obtained from each language sample taken from the middle five minutes of each session. First, the number of utterances were tabulated and recorded, and then the number of different nouns used during that time was determined. Finally, a modified grammatical score was derived using the categories and corresponding point values from Laura Lee's (1974) Developmental Sentence Analysis.

These three measures enabled the investigators to not only observe any change that might occur in linguistic performance, by noting the change in the use of nouns or more

complex syntactic structures, but also monitor any change in the number of utterances which could be directly attributed to the occurrence of any particular experimental facilitating/inhibiting ratio used.

A mean for each category, i.e., number of utterances, nouns, and grammatical score was determined for each base rate and experimental session for purposes of comparison. These results can be seen in Table 2.

Table 2

Group means obtained by condition (number of utterances, number of different nouns, and grammatical content DSS scores) (N = 12).

| | Number of Utterances | Number of Nouns | Grammatical Content DSS Score |
|------------------|----------------------|-----------------|-------------------------------|
| 1st baserate | 14.83 | 11.58 | 1.94 |
| 25% facilitating | 35.92 | 21.12 | 4.12 |
| 50% facilitating | 32.50 | 19.08 | 3.64 |
| 75% facilitating | 30.25 | 18.92 | 4.02 |
| 2nd baserate | 16.12 | 11.25 | 3.83 |

Using a F-test for dependent measures (Silverman, 1977), the base rate and experimental sessions, experimental sessions alone and base rate sessions alone were all compared to determine which, if any, condition(s) effected any change in the subject's verbal behavior. Results can be seen in Table 3.

Table 3

Results of F-test for dependent measures, for each combination of sessions.

| | Number of Utterances | Number of Nouns | Grammatical Content DSS |
|-------------------------------------|----------------------|-----------------|-------------------------|
| Baserate & Experimental (df = 4,55) | F = 4.942* | F = 2.191 | F = 1.08 |
| Experimental alone (df = 2,33) | F = .3742 | F = .1569 | F = 1.00 |
| Baserate alone (df = 1,22) | F = .00356 | F = .0058 | F = 2.85 |

*F = 4.94, p < .01

Only one comparison was significant and that was the change in the number of utterances emitted from base rate to experimental sessions. The subjects made significantly more statements (p < .01) during experimental sessions than base rate. No other significant changes were found.

DISCUSSION

The purpose of this study was to determine what effects various facilitating vs. inhibiting ratios would have on the verbal output of a group of mentally retarded adolescents. The results seem to indicate that any form of verbal interaction between the researchers and subjects resulted in an increase in verbal output, but there were no significant differences found between the three facilitating/inhibiting ratios used by experimenters to elicit spontaneous speech in these subjects (Figure 1).

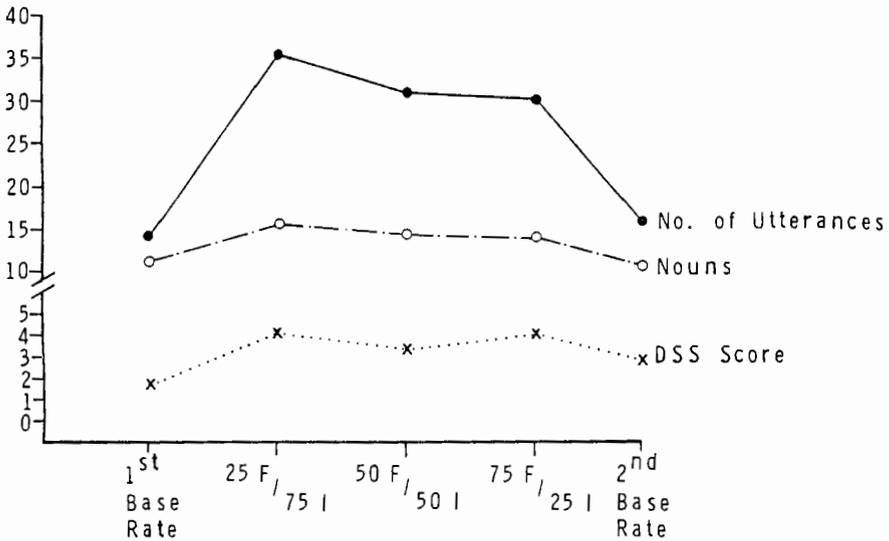


Figure 1. Group mean by condition for the three measures used. F/I ratio is the amount of facilitating vs. inhibiting verbal interactions per experimental session.

The results of this study yielded two major findings. The first of these is that the 75% facilitating vs. 25% inhibiting ratio did not significantly enhance or increase, over the other ratios, the quantity or quality of spontaneous speech emitted by the trainable mentally retarded students in this study. This finding does not support Hubbell's (1977) hypothesis. The second major finding is that all ratios of verbal interaction significantly increased the amount of spontaneous speech elicited from the subjects.

A number of factors may have contributed to the discrepancy between data presented here and the hypothesis put forward by Hubbell (1977) and others. First, the ratios chosen for this study were arbitrary and may, in fact, have been inappropriate to the demonstration of differential effects of the various verbal behaviors. Second, the students seen were not previously diagnosed as having a significant language problem, whereas the children in the other studies cited had been selected from a clinical population of language deficient children. Hubbell himself stated in his 1977 paper (p. 228) that facilitation has been found to be useful with mentally retarded subjects. We also found that facilitation increased spontaneous speech in our mentally retarded adolescents, but not significantly better than the other ratios used. Third, the subjects in this group were only seen five times and received only three different ratios of facilitating vs. inhibiting speech. In both the Seitz and Hoekenge (1974) and Hubbell (1977) studies, the children received a larger number of sessions with a very high percentage of

facilitating verbal behaviors. Thus, the possibility exists that the extended sessions used might have more greatly effected the results in these studies than in the present study.

The major finding of the present study was that it was not the type of verbal behaviors emitted by the experimenters that influenced verbal output in the present study, but rather the fact that the experimenters actively interacted with the children in any form. One might speculate, based on the present data, that using any of the language programs developed by Miller and Yoder (1972), Gray and Ryan (1973), Fokes (1976) or Laura Lee et al (1975) can in fact facilitate spontaneous speech equally as well as programs developed or suggested by Seitz and Hoekenge (1974). Hubbell (1977) himself clearly stated that a combined approach, using both kinds of procedures might be more effective than either singly. The key aspect seems to be that the teacher/clinician must provide some opportunity for verbal interchange to occur in a less structured format.

CONCLUSION

The amount of facilitating vs. inhibiting verbal behaviors used by the investigators in this study did not differentially affect the amount of a subject's spontaneous speech with regard to number of utterances, use of different nouns or grammatical complexity. Rather, all ratios used significantly increased verbal output in the subjects. Certain interpretations of the data have been suggested and further areas of research are outlined.

Teachers and clinicians working with mentally retarded or other language disordered children might consider the use of both approaches, but with each approach carefully described so that the child understands clearly the limits or constraints of the situation. For many clinicians, this means that they may have to provide their children with some time in less structured speaking situations.

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