ACQUISITION OF SYNTAX VIA TELEVISION BY TWO AND ONE-HALF TO THREE AND ONE-HALF YEAR OLDS

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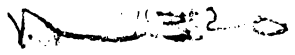

ABSTRACT

ACQUISITION OF SYNTAX VIA TELEVISION BY
TWO AND ONE-HALF TO THREE AND
ONE-HALF YEAR OLDS

By

Diane Roscile Moholy

It is generally agreed that the quality of the child's linguistic environment is the most important external factor affecting the rate of language development. It has not been determined what constitutes a quality environment. There is little doubt that television viewing has a potential for enhancing the quality of a child's linguistic environment.

A young child acquires the basic rudiments of syntax by either repeating verbatim what is uttered by a model (modeling), or by hearing and repeating expansion made on the child's utterance by a model (expansion). A child tends to reduce adult utterances, resulting in the process called reduction. Whereas an adult tends to expand a child's utterance, resulting in the process of expansion. It works much like a telegraphic message: a parent or model expands on the child's utterance by adding functors to the child's content words of nouns, verbs and adjectives.

Since media sources account for a very large percentage of some children's total language exposure, the positive effects are well-worth establishing. Sesame Street, a production of Children's Television Workshop of New York has adopted effective verbal communication as one of its primary objectives for young viewers. Hence, this program was utilized in this study.

Expansions seem ideally suited for assisting the acquisition of grammar, while modeling appears to limit the child's language exposure. It has been argued that what is important for the child is not a particular kind of exposure but simply ample exposure to well-formed speech. This experiment was designed to isolate these two processes of language development and to compare their effects.

Three hypotheses were tested:

1. Children viewing the television segments containing expanded material will show a greater language growth than will children receiving neither treatment.

2. Children viewing the television segments containing modeled material will show a greater language growth than will children receiving neither treatment.

3. Of the two treatments, children viewing the television segments containing expanded material will demonstrate greater language growth than will children viewing the modeled material.

The subjects were twenty-seven two and one-half to three and one-half year old children enrolled at the

Married Student Activities Unit day-care center in East Lansing, Michigan. Three randomly assigned groups, each containing nine subjects, were formed: two experimental and one control. One group (expansion) was exposed to 30 minutes per day of televised expanded material; another group (modeling) was exposed to 30 minutes per day of televised modeled material. A third group (control) received no treatment. These respective situations existed for two weeks, without exposure on the weekends.

All twenty-seven subjects were pretested and posttested on three dependent measures of language development: mean length of utterance, ability to count, and raw score on the Peabody Picture Vocabulary Test. All three indices have been used as a measure of language development in previous research, with the mean length of utterance being the most widely acclaimed measure of language growth.

In evaluating the validity of the dependent measures it was assumed (1) that a developmental characteristic must either stay at the same level or increase; (2) that a valid measure of a developmental characteristic will yield scores conforming to that pattern; and (3) that converse fluctuation in the scores indicates the presence of unaccountable superficial influences. Means on the pretest and posttest scores were computed. The results indicated a trend

insomuch that all the means, excluding two, increased from the pretest to the posttest.

For statistical analysis, gain scores were computed for each group between the pretest and the posttest scores. A t-test was computed between experimental and control groups on these gain scores. A t-test was also computed between the two experimental groups to determine which treatment had the greater effect. A non-parametric test was used to determine the number of subjects who demonstrated an increase in one direction by chance alone.

Two major findings emerge from these analyses. First, there was a low correlation among indices between the experimental and control groups. Four possible explanations for this finding are discussed: (1) low internal reliability among the assistants administering the tests; (2) children's language skills and motor skills alternate in developing, causing plateaus or dormant periods of learning in one skill while the other is developing; (3) control group scores were initially higher, indicating the possible presence of a level of exposure to language in their non-treatment environment, and (4) limited amount of actual treatment time. The full explanation is probably some combination of all of the above possible explanations.

The second major finding is that expansion was the more effective treatment for increasing a child's mean length of

utterance count. While this was the only dependent measure that was significantly proven, the other two measures indicated expansion was slightly superior.

On the basis of these results, none of the research hypotheses are confirmed. Four alternative hypotheses are confirmed, giving positive enforcement towards the three research hypotheses.

These results tend to support the statement that the quality of a child's early linguistic environment is the most important external factor affecting the rate of language development. Providing the child with an enriched linguistic environment of ample well-formed sentences paired with meanings the child can understand will most adequately facilitate a young child's acquisition of syntax.

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Diane Roscile Moholy

A THESIS

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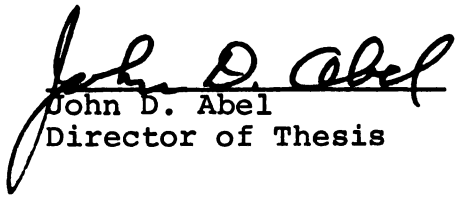
Accepted by the faculty of the Department of Television and Radio, College of Communication Arts, Michigan State University, in partial fulfillment of the requirements for the Master of Arts degree.



John D. Abel
Director of Thesis

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To Mom and Daddy, I wish to express my gratitude for their omnipresent personal support and inspiration.

TABLE OF CONTENTS

TABLE OF CONTENTS--Continued

APPENDICES Page

LIST OF TABLES

CHAPTER 1

THE PROBLEM AND RELATED RESEARCH

The Need

Language is the basis of communication with others. It is a highly complex form of behavior entailing systems of sounds, grammar and meaning. The process by which a child changes from an inarticulate organism to an articulate organism continues to defie understanding. The phenomenon warrants in depth study and has only received limited and fairly unsophisticated research.

The role of language in our society vehemently necessitates further study of this complex process of acquisition of syntax. Language and thinking are so closely related that experimenters must ordinarily use the child's language to study his thoughts. The ability to successfully communicate with others is a prerequisite for social acceptance.

Television is continually taking over the role of educating, or some may call it "babysitting" today's children. This extremely influential medium has the vast potential of becoming a powerful educational tool for children. Establishing television's role within a young

child's environment will certainly aid the multifaceted process of child development.

Studies combining the effects of linguistics and television are long overdue. Adequate television programming for young children has just begun to be developed. This success story has stirred researchers to seek more knowledge about two very omnipresent and yet clandestine phenomena: a child's acquisition of syntax and the role television can play in facilitating this process.

This study incorporates both phenomena in an attempt to contribute to our limited understanding of a child's acquisition of language in a television assisted situation.

The Problem

As previous studies indicate, a child acquires language by either modeling a model's sentence (Cazden, 1964) or by expansions made on the child's utterance by a model (Slobin, 1965) or by an exposure to an environment utilizing both expansion and modeling methods of language acquisition.

Expansions, which are constructed much the same way telegraphic messages are, seem ideally suited for assisting the acquisition of grammar. Modeling, which is contingent upon an original utterance in order for direct repetition to occur, appears to somewhat limit advancement of language

acquisition. It can be argued that what is important for the child is not a particular kind of interaction but simply ample exposure to well-formed speech (Brown & Bellugi, 1964).

This experiment was designed to separate the modeling and expansion methods of acquiring language skills and at the same time expose the children to well-formed speech. The latter design element of the experiment was achieved not through personal interaction as with all the other studies cited, but rather through an electronic medium--television.

Children can learn language fundamentals by viewing television (Ball & Bogatz, 1970). If this is the case, both well-formed sentences and an exposure to either one of the language acquisition processes should establish an ideal learning environment. "All the available evidence . . . supports the general prediction that the quality of a child's early linguistic environment is the most important external factor affecting the rate of language development" (Carroll, 1961, p. 340).

The experiment reported here was designed to test the effects of a particular process of language acquisition, either modeling or expansion, in a consistent, ideal linguistic environment, viewing television.

The Hypotheses

While all the studies providing background data deal with a personal two-way communication interaction process, their general conclusions can be applied to a non-personal one-way communication process. Belief that exposure alone is sufficient receives some support from the occasional stories of children who remained silent for a long period of time and then started to speak in mature patterns (Ervin, 1964, p. 163). A pure example of this could be that of a child who heard speech only over television or radio. Exposure to well-formed sentence structure over television is only one process of creating an ideal linguistic learning environment for a child. An argument that more than exposure is necessary could be made on the evidence that children from the lowest social class groups, who are known to be retarded in language development, watch as much as or more television than do culturally more advantaged children (e.g., Wortis, 1963).

This qualification of well-formed sentences is matched with simultaneously paired meanings the child can understand (Brown & Bellugi, 1964). There was no discrimination of television viewing for children in Wortis' study. Presently children's programming is developing both in quality and quantity which helps to create an ideal linguistic

environment by restricting children's viewing to meanings they can understand.

This study employed what is considered one of the finest children's programs available today--Sesame Street. A one-way communication process of viewing television, where the child is not an active participant, is designed to measure only one source of verbal stimulation available to a child during this process of language acquisition. An increased exposure to language would assist the child by providing more models for imitation and more instances of the concepts to be learned, while expansions would additionally provide more feedback.

On the question of the relative assistance to the child provided by models and expansions, prior research predicts that modeling would be more helpful. This prediction is embodied in the three research hypotheses which this research tests:

1. Children viewing the television segments containing expanded material will show a greater language growth than will children receiving neither treatment.

2. Children viewing the television segments containing modeled material will show a greater language growth than will children receiving neither treatment.

3. Of the two treatments, children viewing the television segments containing expanded material will demonstrate greater language growth than will children viewing the modeled material.

Review of Related Research

Acquisition of syntax by young children

In order for a child to comprehend and use a particular language, it is necessary that it be expanded or modeled (Odem, Liebert, & Hill, 1968). Reduction can be defined in terms where a child shortens an adult's utterance much the same way an adult shortens a message when sending a telegram: high-information or content words are retained and the function words (functors) are omitted. When a child imitates an adult utterance he reduces its length but maintains the word order. When an adult adds to a child's utterance, such responses are called "expansions". Brown and Bellugi (1964) suggested that they might provide optimal data for the acquisition of grammar.

Child: John dinner
Adult: John is having dinner.

Child: Throw Daddy
Adult: Throw the ball to Daddy.

Just as the child preserves the word order in reducing the adult utterance, the adult preserves the word order in expanding the child's utterance. A parent frequently attempts to verify his interpretation of the child's utterance when he responds by expanding.

Brown and Bellugi precisely define "expansions" as a process in which the mother or the model does not exactly

reproduce the model sentence of the child, but instead adds something to it or expands it. What is added is a functor, e.g., the inflection for third-person on the verb, the very form the child omits when he imitates a model. According to Brown and Bellugi, expansion is a kind of communication check between the mother (model) and the child: "Is this what you mean?" Since the expansion must come from the mother, it is important to find out how she comes to expand on a child's utterance.

> Consider the utterance "Eve lunch." So far as grammar is concerned this utterance could be appropriately expanded in any of a number of ways: "Eve is having lunch;" "Eve had lunch;" "Eve will have lunch;" "Eve's lunch;" etc. On the occasion when Eve produced the utterance, however, one expansion seemed more appropriate than any other. It was then the noon hour, Eve was sitting at the table with a plate of food before her, and her spoon and fingers were busy. In the circumstances "Eve lunch" had to mean "Eve is having lunch." A little later when the plate had been stacked in the sink and Eve was getting down from her chair the utterance "Eve lunch" would have suggested the expansion "Eve has had her lunch." Most expansions are not only responsive to the child's words but also to the circumstances attending their utterance. (p. 142)

Brown and Bellugi were not implying that a child learned grammar by storing the expanded versions of his telegraphic utterances, since he could not in this way learn more than the finite set of sentences he had at some time attempted to produce. Rather, they recognized that expansions were only raw data for the child's mental processes and that syntactic knowledge was a system of rules somehow

derived from those data. They contended that the data provided by expansions might be particularly relevant and seemed to be delivered with ideal timing.

"Well-formed sentences which are simultaneously paired with meanings the child can understand" affected his language development (Brown & Bellugi, 1964). If this pairing is important, it seems likely that conversations in which the child is a participant would be more likely to provide it. Based on these assumptions, relevancy and timing of expansions are important.

Whereas Brown and Bellugi's study demonstrated that expansions were not necessary for learning either grammar or a construction of reality, Slobin (1965) states that a child can only make so many decisions per sentence and by the process of expansion, this ability can be slightly stretched.

According to Slobin, a child has three choices when speaking:

a. "simply repeating his original utterance without picking up anything the adult has added
b. "say something even shorter than what he originally said
c. "add something to his original utterance, something picked up from expansion".

In his experiments with two children, Slobin found that they utilized (c) most of the time. Also from observing these children, Slobin concluded that as a child grows older, he imitates less and that the adult expands less. This gives reference to the possibility of a critical age for expansion. According to Slobin, this critical age would be around 36 months.

Another test on this critical age group concerning acquisition of grammar found that modeling alone was of considerably greater value than expanding alone (Cazden, 1965).

Her study hypothesized that "children whose language is expanded or who merely hear more language spoken will show a greater language growth than do children who receive neither treatment" (expansion or modeling). Also hypothesized was that "of the two treatments, expanding will be more effective."

Cazden and two trained tutors worked daily for twelve weeks with twelve lower-class Negro children: four in the modeling group, four in the expansion group and four in the control group. The children's age varied between 28 and 38 months, but all within this critical age range.

The expansion group received 40 minutes per day of intensive and deliberate expansions; the modeling group received 30 minutes per day of exposure to an equal number of

well-formed sentences that were deliberately not expansions. The control group received no treatment.

On the analysis of variance with covariance control, the adjusted means were higher for the modeling group. This data indicates that while both expansion and modeling forms of dialogue facilitate language development, modeling alone is of considerably greater value than expanding alone. The order of grammatical improvement scores for the three groups is (1) modeling, (2) expansion, and (3) control.

> The only explanation I can offer is that as the concentration of expansions goes up--in this case far above that naturally occurring in parent-child conversation--the richness of the verbal stimulation goes down. Expansions are by definition contingent on the child's speech in content as well as in timing. To the extent that they are pure expansions just filling in the child's telegraphic utterance to make a complete sentence, they will have less variety of vocabulary and grammatical patterns than the adult's non-expanding speech normally contains. The suggestions that the richness-improverishment dimension may be critical thus gains some support. (Cazden, 1965, p. 91)

The process of acquisition begins when the child is born and under normal maturation conditions is a dynamic continuous process. The language stimulation available to a child during this process can and clearly does vary in quantity and quality. It seems intuitively obvious that differences in quantity and quality should affect a child's language development.

Learning from television and Sesame Street

One source of language stimulation for today's child is derived from electronic media. Within this array of electronic sources of language exposure, television viewing ranks the highest for young children.

A study by Friedlander (1971) partly dealt with the role television plays in the percentage of total language exposure for two families. The study tabulated the sources of all utterances a child heard for the Smith and Jones families. While the study was not designed to test the direct effect varying amounts of television exposure could have on a 12 month infant, the families showed considerable difference in this category.

Percentages of Systematically Sampled Utterances in the Homes of Two 12-Month Infants, Showing the Source of All Utterances and the Sources of Infant-directed Utterances

Source of Utterance	Smith Family	Jones Family
All Utterances		
Mother	22%	11%
Father	18%	4%
Baby	35%	15%
Other (radio, TV, Guests)	25%	70%
Infant-directed Utterances		
Mother	67%	73%
Father	30%	24%
Guests	3%	3%

Source: Friedlander, 1971.

The upper section of the table shows that the families were radically different in terms of the infants' exposure to television (the principal element of the "Other" category).

This study has only fragmentary information on which to estimate the language learning impact of television exposure, which occupied so much of the Jones' non-personal linguistic time. Mrs. Jones reported that at the age of 22 months, the little girl was learning to count without parental tuition, solely by watching Sesame Street. The mother's report was verified by a visit to the home by observers who concluded that it was apparent the child had learned at least this much speech by watching and listening to television.

> The presence of the mass media is pervasive in many American homes. Media sources account for very large percentages of some children's total language exposure. . . . It would hardly seem realistic to try to explain language acquisition without reference to these major sources of influence. Yet surprisingly, one hardly ever find mass media factors discussed in the contemporary professional literature on language development. (Friedlander, 1971, p. 270)

Since Friedlander's statement, there have been a number of studies attempting to explain language development in reference to the children's television program entitled Sesame Street.

Children's Television Workshop (CTW) of New York, has done perhaps "more than any other producer of instructional programs to use research creatively and to guide creativity

with research and in the course of so doing has produced the all-time hit series of children's television, Sesame Street" (Schramm, 1972, p. 105).

The fact that educational television is an effective medium for teaching certain skills to very young children has been demonstrated in two research studies by Ball and Bogatz, 1970 and 1971, in conjunction with Educational Testing Service. Sesame Street verifies that television can be an effective medium for teaching 3-to-5-year-old children important simple facts and skills, such as recognizing and labeling letters and numerals, and more complex higher cognitive skills, such as classifying and sorting by a variety of criteria (Ball and Bogatz, 1970).

The potential of educational television as a teaching medium is suggested by three primary findings, that

> . . . children who watched the most learned the most . . .
>
> . . . the skills that received the most time and attention on the program itself were, with rare exceptions, the skills that were learned the best . . .
>
> . . . the program did not require formal adult supervision in order for children to learn in the areas the program covers. . . . (Ball and Bogatz, 1970, pp. 3 & 4)

The sample numbered 943 children covering areas of disadvantaged children from the inner city, advantaged children from suburban areas, children from rural areas and disadvantaged Spanish-speaking children. With this diverse

sample, Ball and Bogatz found that 3-year-old children gained the most; 5-year-old children gained the least. This suggests that 3-year-old children are able to learn many skills that have traditionally been introduced at later ages.

More time on Sesame Street was devoted to letter-related skills than to any other single subject, and it was within the area of letter and number skills that the children's gains were the most prevalent. It was found that in addition to what was directly and deliberately taught on the program, some transfer of learning occurred (Ball and Bogatz, 1970).

In a continuing evaluation of the educational potential of Sesame Street there was "empirical evidence that in viewing Sesame Street, children were not passive and their learning included more than the accumulation of important basic skills through simple continuous associations (rote learning)" (Ball and Bogatz, 1971, p. 9).

In support that Sesame Street can contribute to creating an ideal linguistic environment, and is not intended to replace all other sources of verbal stimuli, "it (Sesame Street) was meant as an ingredient for the educational diet of the millions of 3-to-5-year-old children who do not have the opportunity of going to preschool" or receiving an adequate amount of verbal stimuli from other sources (Ball and

Bogatz, 1971, p. 9). Again, it should appear intuitively obvious that differences in quantity and quality should affect a child's language development.

In defining television's potential for teaching young children, modeling of effective verbal communication has been a guiding principle behind many writing and production methods by the writers for Sesame Street (Lesser, 1972).

Expansion of a concept allows the message to be communicated to the child with an embellishment of language stimuli. Inherent to this process is the possible pitfall of including irrelevant and extraneous material, either visual or auditory, that confuses the child and causes him to loose interest. Sesame Street has been designed to screen out irrelevancies and reduce extraneous material when expanding on a concept (Lesser, 1972).

CHAPTER 2

PROCEDURE

Briefly: Twenty-seven children, ranging in age from 31 to 41 months, were randomly assigned to one of three treatment groups. Nine assistants pretested the children and when the treatments concluded, posttested the children. One group (expansion) viewed segments of Sesame Street that were of an expansion format. Another group (modeled) viewed segments of Sesame Street that were of a modeling format. A third group (control) received no special treatment. Two 15 minute daily treatments extended over an 18 day period, with no treatment on weekends.

These procedures will be discussed in detail under four headings: subjects, treatments, measure of language development, and statistical analysis.

Subjects

The subjects were twenty-seven children enrolled in a day-care center at Michigan State University, East Lansing, Michigan. The children were mixed racially, with Caucasian outnumbering any other (21 children). There were 14 boys

and 13 girls participating in this study. At the time treatment began they ranged in age from 31 to 41 months.

The process of selecting the children was limited to two approaches: using existing day-care centers, or by soliciting children through Church organizations. The latter procedure was abandoned because it would have been extremely time consuming and had no guarantee of producing an adequate number of children for this study.

Since it was clear from previous research (Brown and Bellugi, 1964) that the age range needed was approximately 30 to 40 months, the first task was to locate a day-care center that enrolled children under three years of age. The most logical place to look was on the campus of Michigan State University, since there are three day-care centers located on the campus.

After a lengthy discussion with a representative of the Institute of Family and Child Studies, which is the department responsible for the three day-care centers, it was decided that only one of the centers would be appropriate in terms of children, space and schedules for the study. That center was the Married Student Activities Unit Day-Care Center (MSAU).

Upon proposal approval by the Department of Television and Radio, an "Application for Research" form was submitted for approval by the Institute of Family and Child Study and

by the Preschool Committee. Approval of the research by these two committees forwarded the application to the Assistant Director of Early Childhood Laboratories who in conjunction with the unit coordinators made final judgment as to the starting date. Research policy by the Institute requires that all researchers give only general results, not individual data. Compliance with research policy was upheld throughout this study (see Appendix A).

The Married Student Activities Unit Day-Care Center is located within a married student housing complex, southwest of the main campus. The day-care center has a capacity of 110 children and was full to its capacity Spring term, 1974. The center has five units: one infant, one toddler, and three pre-school. Since this study only concerned the preschoolers, no references will be made to the other units.

For a child to qualify for enrollment in any one of the three preschool units, he or she must be between the age of 2½ and 5 years at the time of desired enrollment, be toilet-trained, and have a complete physical check-up. One of the child's parents must be enrolled in the University and carrying a minimum of six credits. There is no discrimination of sex or race for admittance to the center.

There is a breakdown within the units, with Unit 1 and Unit 3 being full-day attendance and Unit 2 being half-day attendance. In order to provide continuity for the children,

the day-care center requires the preschool child to be enrolled and attend a minimum of two-half days a week in the same class.

The Married Student Activities Unit Day-Care Center is open from 7:30 a.m. until 5:30 p.m., Monday through Friday from the first day of registration to the last day of exams each term.

The following information about the staff relates to the preschool units only. The preschool units maintain a staff ratio of one assistant for every five children (1 to 5). There are four A.M. head teachers, four P.M. head teachers, four assistant teachers, and students from the University balance out the 1 to 5 ratio. The center has one nurse, one cook and one cook assistant, one secretary and one unit coordinator.

On a typical day for all three units, the children arrive at the center from 7:30 to 9:00 a.m. The block of time is designated as quiet activities and is tended to by assistants. Between 9:00 and 9:15, the children go into circle time which is lead by the head teacher. This could be construed as the instructional block of time. Activities in this block vary from making peanut butter from fresh peanuts to having a photographer come in and simplistically demonstrate his equipment. Toilet time follows this, although the children are allowed to go to the rest room at

any time. Between 9:30 and 9:50 the children have their morning snack and clean up afterwards. Weather permitting, the next thirty minutes are designated for outdoor play. The center has a fairly large backyard with two swing-sets, a slide, tricycles, a sandbox and large cement cylinders for the children to climb on. From 10:30 to 11:15 the children go inside and are involved in a free play period. Various activities are set up, three or four types, and the children are allowed to move freely from one activity to another. The free play period usually involves one activity for the motor skills, books and records, art and a science project.

From 11:15 to 11:30 the children are divided into small groups and are instructed in developmental activities. These range from language, small motor skills, large motor skills, and math skills. This is followed by another 15 minute toilet routine.

At this point, the ½ day morning children are usually picked up by a parent. The ½ day afternoon children arrive at 1:00 p.m.

Eleven forty-five is lunch time, lasting between 20 and 30 minutes. Afterwards the children clean up and get ready for their nap. Nap time runs from 12:15 to 2:30, with another snack following.

Between 3:00 and 3:30, the P.M. staff comes on the floor and the A.M. staff leaves. The rest of the afternoon,

until 5:30 or until the child is picked up by a parent, is filled with flexible activities. The children play outside, weather permitting, or have free play inside.

In selecting subjects from among the children at these three units no attempt was made to obtain demographic information on the families or make any observations of the child's home environment. Rather, it was assumed that these children were from fairly homogeneous family-life-styles by the requirements of the center for enrollment.

It was determined that, at a minimum, there should be nine subjects in each experimental and control group. This would require a minimum of 27 subjects for this study. The three units combined had a total of 40* children who were between 31 and 41 months old.

Letters of introduction and explanation of the study were sent to all the parents whose children were in the designated age range.** A permission slip was enclosed requiring a parent's signature in order for the child to be tested and to participate in this study.

Because the original design of this study included weekend treatments, which entailed the parent making arrangements for the child to get to the center, there were only

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*Two children were eliminated because they had non-English speaking parents.

**Copy of letter and permission slip are included in Appendices G, H, and I.

16 affirmative responses by the parents. Departure from this original design had to be accepted in terms of redesigning the study not to include weekend treatments. Telephone calls were made to each of the original 40 parents, which resulted in exactly 30 affirmative responses.

Ideally, the study was designed to include either all male subjects or all female subjects. This was more in deference to the generally held belief in differential verbal development than to any substantial amount of recent confirming evidence. McCarthy (1954) states that girls develop language skills faster than boys. But Templin (1957) found smaller sex differences in linguistic development, with boys ahead at the age of three, though not significantly so. Berko (1958) found no sex difference in the ability of 4 to 7 year old children to handle English morphology. There are too few cases with significant data to permit any generalization about sex difference and language development abilities. This study involved 14 boys and 13 girls.

The subjects were randomly assigned to be pretested by one of the nine assistants and then randomly assigned to one of the three treatment groups: expansion, modeling, or control. As the study progressed, three children, one from each group, were dropped due to lack of cooperation on the part of the children. Thus, each cell or group contained

nine subjects, for a total of 27 subjects participating in the study.

Once the assignments had been made, the treatments were begun. The parents of the children were not informed as to which group their child had been assigned. Although the parents were free to contact the investigator if they had any questions once the study had begun, none did.

Table 1. Demographic Breakdown of Groups

Group	Mean Age (months)	Number of Females	Number of Males
Expansion	39	5	4
Modeling	40	4	5
Control	38	4	5

Treatment

Nine female undergraduates at Michigan State University were given Psychology independent credit for their role as assistants in this project. These students had varied majors, so instruction and assigned readings in language development were necessary. Winter term, 1974 was spent instructing these students on how to obtain mean length of utterance counts, the difference between modeling and expansion methods of acquiring language skills, and how to

administer and score the Peabody Picture Vocabulary Test. They were also requested to view Sesame Street periodically during the term.

The assistants were also instructed in the process of video tape editing. After this instruction they were required to make two-15 minute tapes: one containing expansion material and one containing modeling material.

Selection of treatment material.

The assigned readings and practice in class demonstrated the difference between segments on Sesame Street that were of expansion or modeling format. Expansion segments were defined in terms of taking one original concept and expanding on it within that short segment. An example of this would be the segment involving a little girl and ping-pong balls. She took the concept of "what would happen if" she dropped the ping-pong balls on her cat. Each time a result of this action was reported, the preceding video and audio of the story were repeated verbatim.

Modeling segments were defined in terms of repeating one word, letter or number more than once. The most prominent example of the repetition was the segment concerning numbers: "1,2,3,4,5,6,7,8,9,10." The audio was constant with changing video or picture. Another example would be the repetition of a letter: "Z - Z - Z- Z." Again, the video changed while the audio repeated. The assistants

were asked to make judgments on each segment and classify it as either expansion or modeling. If a segment did not fit into one category or the other, it was eliminated.

Fourteen segments of Sesame Street were video taped directly off the local Public Broadcasting Station, Channel 23, WKAR-TV, East Lansing, Michigan. The programs were then edited into ½ inch monochrome video tape and categorized into one 15 minute block of modeling material and one 15 minute block of expansion material. The assistants were usually able to obtain this amount of material from one-one hour program of Sesame Street. Each of the nine assistants was required to turn in one 15 minute tape containing expansion material and one 15 minute tape containing modeling material.

Pretesting procedure.

For pretesting, the assistants were randomly assigned three subjects, with three assistants testing four subjects. Pretesting consisted of recording 100 original utterances by the subject, ascertaining the subject's ability to count, and the subject's Peabody Picture Vocabulary Test raw score. From the 100 original utterances, the subject's mean length of utterance count was calculated.

Due to the limited space at the center, the subjects were pretested throughout the center: in the observation booth, in the conference room and outside on the playground.

The Peabody Picture Vocabulary Test was generally administered in the quiet conference room. The other places in the center were more conducive for initiating the subject's speech, and thus were utilized for obtaining the subject's 100 original utterances and ability to count.

The treatment situation was set up in the conference room. This room is equiped with two tables, a soft drink machine, a table cluttered with instructional materials, a rest room and a sink, and water fountain. Since there was no television set at the day-care center one had to be supplied. A Sony 3500 video tape recording machine was connected to the television set in order to establish a playback system for the pre-recorded and edited treatment tapes. This system remained in the conference room until the conclusion of the study.

Schedule of treatment.

So as not to disrupt the continuity of the normal daily activities in the units, a schedule for treatments was established. This schedule ran Monday through Friday for two consecutive weeks.

Monday through Friday Morning Schedule

8:35 to 8:50	treatment
8:55 to 9:10	treatment
10:30 to 10:45	treatment
10:50 to 11:05	treatment

Two make-up sessions were scheduled on the tenth and eleventh days of the experiment. These sessions were in the afternoon.

Afternoon Schedule for Make-up

2:30 to 2:45	treatment
2:50 to 3:05	treatment

In the letter sent home to the parents, emphasis was placed on having the subjects at the center no later than 8:30 a.m. Sporadically, a few subjects arrived late, which required a time delay in the treatment schedule. But in general, treatments began promptly at 8:35 a.m. Whichever group, 1 or 2 had the full nine subjects at the center first, was given the treatment first. They were also given the treatment first on the second round of morning treatments. Thus, if all nine subjects in group 2 (modeling) arrived at the center prior to 8:30 a.m., they viewed the treatment from 8:35 to 8:50 and then again from 10:30 to 10:45. The study had been designed to alternate the first exposure sessions between the two groups, but the sporadic arrival of the subjects did not allow this systematic scheduling.

There were nine original treatments of expansion and nine original treatments of modeling on video tape. These tapes were numbered 1 through 9 and shown in that order. The same treatment tape was not shown twice in one day. Repetition of the tapes with this time lapse between exposures was not considered redundant for the subjects.

At this age, repetition and continuous associations are necessary for the rote learning of basic knowledge (Ball & Bogatz, 1972; Cass, 1970). Within many of the one hour programs on Sesame Street repetition of certain segments often occurs.

Each head teacher explained to all the children in each unit that some children whose parents had given special permission, would go with Ms. Diane and watch television. The subjects in group 1 (expansion) were only told that they were in group 1. In a like manner, the subjects in group 2 (modeling) were only told they were in group 2.

The first two days of getting the subjects to remember and recognize which group they were in was time consuming and confusing for them. On the third day, the subjects were able to recognize the other subjects in their group and what group number they were. This facilitated the process of getting the subjects from the units and into the conference room for treatment.

At the onset of the study, there were 10 subjects in each cell or group. Within the first week it became apparent that two subjects, one from group 1 (expansion) and one from group 2 (modeling) were not going to cooperate according to the design of the study. In order to maintain a low level of anxiety for all the subjects involved in the experiment, these two were dropped from the study. Another

subject, in the control group, was ill at the time of pretesting and subsequently also had to be dropped from the study. The eliminations resulted in a total of 27 subjects participating in the study; 9 in each group.

As encouragement and incentive for the subjects to sit quietly and watch their respective segments, each subject was given a piece of candy after each treatment.* As the study progressed, the candy played an important role in facilitating the subjects to attend the treatments.

The purpose of the control group was to serve as a base-line against which to measure change in language development beyond that due to maturation and other uncontrolled variables. Once the group assignments had been made, and these subjects were pretested, there was no further contact made with them until posttesting. They participated in the daily routine at the center.

Posttesting procedure.

For posttesting, which followed the conclusion of two weeks of treatment, the nine assistants were again randomly assigned three subjects. The subjects were posttested on the same three indices on which they were pretested. The procedure for the posttesting was identical to that of the pretesting.

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*M & M candies were found to provide the most "incentive" for these subjects.

A few of the subjects in the control group and many of the older children at the day-care center wanted to watch the television. As a compromise for these children, after posttesting was completed, a television was taken into each unit so all the children could watch Sesame Street.

Measures of Language Development

Trying to study the acquisition of grammar by more direct experimental techniques is complicated by working with children at a young age when this process takes place. Probably the most difficult element of this research was establishing valid and reliable dependent variables, measures of a child's language development which together constitute an operational definition of that development.

Theoretically, there is a vast difference between what a child can do and what he actually does. Likewise, there are variations in styles of television viewing by children.

> Some children can view television for hours with their eyes rarely leaving the set. We were so struck by this viewing style when we first began doing research on appeal that we coined the term 'zombie viewer' to refer to the child that sat seemingly hypnotized, in front of the set. Other children constantly keep a check on all outside activities in the room while they view. We found these styles to be no guarantee of how much the child was absorbing from the program. (Reeves, 1970, p. 11)

The only means of ascertaining what a child knows or can do is by the child spontaneously responding and then rating this response on some predetermined precise measuring scale.

Acquisition of grammar refers to the increasingly complex structures which the child "has succeeded in mastering and internalizing, whether or not he utilizes them in practice, without interference from the many other factors which play a role in actual behavior" (Chomsky, 1964, p. 36). There is general agreement that linguistic competence in the sense of these structures is not the same thing as linguistic performance in the sense of overt verbal behavior (Cazden, 1965). Obviously one can find out about competence only by studying performance (Chomsky, 1964), but drawing conclusions about the child's development of linguistic competence from an analysis of samples of spontaneous speech should be done with caution and discrimination.

Studying the acquisition of grammar by more direct experimental techniques, by definition is dependent upon the response on the part of the subject. Soliciting responses is further complicated when working with young children, when this process occurs.

An experimental situation had to be designed in which a 31-month-old child was able to spontaneously respond. Such tests or indices were used in this research. The design relied heavily on the analysis of samples of spontaneous speech by the subjects.

The tests also had to relate to the segments being utilized as the treatment. Children's Television Workshop

producers designed Sesame Street primarily as a tool for teaching language concepts and auditory and visual discrimination (Polsky, 1974). CTW's programming objectives conveniently correspond to the objectives of the treatment segments for this study.

The three dependent variables are measures of certain aspects of spontaneous speech. They are: mean length of utterance, ability to count, and the raw score on the Peabody Picture Vocabulary Test (PPVT).

Mean length of utterance.

Mean length of utterance has been the single most widely used measure of language development (McCarthy, 1954). The validity of this test is based on the widespread finding that it increases with age (Cazden, 1965) and language development.

The mean length of utterance for each subject was computed in morphemes, not words. This process requires prior decision about what is an utterance and what is a morpheme. The boundary of an utterance is based on "the usual criteria of either a prolonged pause or a shift of speakers" (Brown & Frase, 1964, p. 52). The process of determining what is a morpheme is more difficult and requires many arbitrary decisions.

A morpheme is not a word; conversely each word is not a morpheme. A word may include more than one morpheme

(e.g., nowhere and running), or a word may be combined into a single morpheme, as a proper name (e.g., Santa Claus and Easter Bunny). Morphemes are further classified as free morphemes (e.g., blue and eat) which can appear alone, and bound morphemes (e.g., ing and ly) which never appear alone.

Determining what is a morpheme is difficult because morphemes are defined as the "smallest units of structure which embody grammatical or lexical meanings" (Carroll, 1959, p. 24). Since meaning is relative to the individual, a set of rules for totaling the number of morphemes and computing the mean was established. Appendix I lists the rules for ascertaining the subjects mean length of utterance count.

The assistants had the option of recording the subjects speech with a tape recorder or writing it down as the child spoke. The assistants were allowed to converse with subjects and/or record verbal interaction between the subjects and another child or teacher.

The assistants, on a written transcript of each subject's utterances, computed the mean length of utterance for the pretest and the posttest using the same set of predetermined rules. Each pretest and posttest computation was then recalculated by the director of the study in order to raise the level of consistency in the process of computing the mean length of utterance.

Ability to count.

One of the specific goals of Sesame Street is categorized as "numbers goals" (Ball & Bogatz, 1971). There is a breakdown within this category that includes:

1. "recitation--the child can recite the numbers from 1 to 20.

2. "enumeration--the child can define a set or subset of up to 10 objects from a larger set.

   example: Here are some pennies?
   How many are there?

Appendix F lists the other objectives under the numbers goal category.

Since this cognitive skill is one of the main objectives of Sesame Street it was included in the battery of dependent variables to be tested. This skill involves rote learning and a high level of repetition.

Most of the segments on Sesame Street concerning numerals were classified under the modeling treatment. This was a result of the high repetition of low verbage content of these segments. There were some cases where the concept of numbers was incorporated into a musical format. These cases resulted in those segments being classified under the expansion treatment, due to high verbage and low repetition.

The subject's ability to count was established by three processes:

1. the subject was asked to "recite" or count as far as he was able

2. the subject was asked to count the number of objects in front of him (these varied: pennies, blocks, leaves, pinecones, etc.)

3. the subject was asked once again to count as far as he was able.

If the subject's ability varied during the three tests, all three steps were repeated until the subject achieved the same count on all three trials. This constituted the accurate level of the subject's ability to count.

This process was done with all three groups for the pretest and the posttest.

Peabody Picture Vocabulary Test (PPVT)

"The Peabody Picture Vocabulary Test is designed to provide an estimate of a subject's verbal intelligence through measuring his hearing vocabulary" (Dunn, 1959, p. 25).

Because of the young age and accompanying inabilities of the subjects, an intelligence test had to be appropriated to their abilities. Since the PPVT does not require the subjects to be able to read, the scale is applicable to any "English speaking resident of the United States between 2 years 6 months and 18 years who is able to hear words, see the drawings, and has the facility to indicate "yes" and "no" in a manner which communicates" (Dunn, 1959, p. 25).

A number of other advantages of the PPVT include:

(1) the test has high interest value and therefore is a good rapport establisher

(2) extensive specialized preparation is not needed for its administration

(3) it is quickly given in 10 to 15 minutes

(4) scoring is completely objective and quickly accomplished in one or two minutes

(5) it is completely untimed and thus is a power rather than a speed test

(6) the test covers a wide age range.

The process for administering and scoring the Peabody Picture Vocabulary Test is described in Appendices C and D.

The reliability of the PPVT was established by calculating Pearson product-moment correlations on the raw scores of the standardization subjects for Forms A and B at each age level. Validity data for the PPVT, or the extent to which it measures what it purports to measure, are of two types: rational and statistical. Content and construct are established validities under rational; congruent, concurrent and predictive are established validities under statistical.

The Peabody Picture Vocabulary Test was included in the battery of tests administered to the subjects of "The Second Year of Sesame Street: A Continuing Evaluation" (Ball and Bogatz, 1971), in order to assess the level of vocabulary. The PPVT is a standardized test and was also used for the first year evaluation of Sesame Street (Ball and Bogatz, 1970).*

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*The PPVT may have a racial bias. Only two pictures portray blacks--one is a porter and the other is a spear carrier. However, it has a rich history in research studies, and its dubious value in black and white comparisons is not the variable under research in this study.

Statistical Analyses

This experiment consisted of a pretest-posttest control group design. This design conveniently controls for all of the seven rival hypotheses[1] (Campbell and Stanley, 1963). The design for this experiment was as follows:

R	O_1	X	O_2	(expansion)
R	O_3	X	O_4	(modeling)
R	O_5		O_6	(control)

This design assumes equivalent groups are achieved by randomized assignments.

The most widely used acceptable test for significance for this experimental design "is to compute for each group pretest-posttest gain scores and to compute a 't' between experimental and control groups on these gain scores" (Campbell and Stanley, 1963, p. 23). This procedure was utilized for analyzing the data for this experiment.

A non-parametric technique of data anlysis was used to give additional insight into the data and contribute to the interpretation of results.

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[1]Testing, maturation, history, instrumentation, regression, selection and mortality.

CHAPTER 3

ANALYSIS OF RESULTS

Evaluation of Measures of Language Development

In evaluating the measures of language development, it is assumed (1) that a developmental characteristic must either stay at the same level or increase; (2) that a valid measure of a developmental characteristic will yield scores conforming to that pattern; and (3) that converse fluctuation in the scores indicate the presence of unaccountable superficial influences.

Table 2, on the following page, gives the mean scores for pretest and posttest on the three language measures for the three groups. On all but the mean length of utterance for the modeling group and the ability to count for the control group, the mean scores increased from pretest to posttest.

The dependent variables appear to have lacked a high level of correlation at the onset of this study. It is not possible to say which of the three measures of spontaneous speech is most valid, but mean length of utterance seems to

Table 2. Mean Scores and Mean Gain Scores for Measures of Language Development

	Pretest	Posttest	Mean Gain
Mean length of utterance			
expansion	4.656	6.899	.7243
modeling	5.215	4.990	.1762
control	4.654	4.889	.5885
Peabody Picture Vocabulary Test			
expansion	39.88	44.22	8.000
modeling	43.00	47.11	6.777
control	39.88	40.77	4.777
Ability to count			
expansion	8.00	12.88	3.55
modeling	10.00	13.33	3.44
control	13.77	13.00	1.000

be the most widely accepted measure. This is in view of its widespread use in language acquisition research.

It does appear that of these three measures, the raw score on the Peabody Picture Vocabulary Test is the least valid. It is the measure that fluctuated from the mean most frequently. A plausible explanation would come from the influence the assistants had over this measure. Much of the results of the PPVT are contingent upon the verbal reinforcement and enthusiasm of the administrators of the test.

Varying levels of verbal reinforcement and enthusiasm result in varying achievement scores. It was assumed that randomization would account for these extraneous variables, but it apparently did not.

Test of Hypotheses

In the process of operationalizing "greater language growth" each of the three research hypotheses were subcategorized into three alternative hypotheses to test the effect of each index of language development. Gain scores were computed for each group between the pretest scores and the posttest scores. A t-test was computed between experimental and control groups on these gain scores for each index.

The first research hypothesis, which states children viewing the television segments containing expanded material will show a greater language growth than do children receiving neither treatment was broken down into three alternative hypotheses:

1. children viewing the television segments containing expanded material will show a greater increase in their mean length of utterance count than will children receiving neither treatment;

2. children viewing the television segments containing expanded material will show a greater increase in their ability to count than will children receiving neither treatment;

3. children viewing the television segments containing expanded material will show a greater increase in

their raw score on the Peabody Picture Vocabulary Test than will children receiving neither treatment.

Of these three alternative hypotheses, only one was significant at the .10 level--children viewing the television segments containing expanded material showed a greater increase in their ability to count than did the children receiving neither treatment. The other two alternative hypotheses demonstrated an increase in trend, but not at a significant level.

The second research hypothesis, which states children viewing the television segments containing modeled material will show a greater language growth than do children receiving neither treatment was broken down into three alternative hypotheses:

1. children viewing the television segments containing modeled material will show a greater increase in their mean length of utterance count than will children receiving neither treatment;

2. children viewing the television segments containing modeled material will show a greater increase in their ability to count than will children receiving neither treatment;

3. children viewing the television segments containing modeled material will show a greater increase in their raw score on the Peabody Picture Vocabulary Test than will children receiving neither treatment.

The control group achieved significantly higher, at the .10 level, on the mean length of utterance count than the modeling group did. The converse effect for this dependent variable is possibly due to the presence of unaccountable

influences in both groups. The modeling group did gain significantly at the .10 level over the control group in their ability to count. While there was not a significant difference between the two groups raw score on the PPVT, there was a positive increase for the modeling group, supporting the trend.

To determine which of the two experimental treatments had the most significant effect, the third research hypothesis was analyzed by a comparison of gain scores on three alternative hypotheses. These alternative hypotheses state:

1. of the two treatments, children viewing the television segments containing expanded material will show a greater increase in their mean length of utterance count;

2. of the two treatments, children viewing the television segments containing expanded material will show a greater increase in their ability to count;

3. of the two treatments, children viewing the television segments containing expanded material will show a greater increase in their raw score on the Peabody Picture Vocabulary Test.

Only one of these three alternative hypotheses supported the research hypothesis on the significant level. The expansion treatments did have a significant effect over the modeled treatments for increasing a child's mean length of utterance count. The other two calculations demonstrated some positive support for their respective alternative hypothesis, but not at a significant level.

The t-test and corresponding level of significance for all alternative hypotheses are found in Table 3.

Table 3. t-Test of Gain Scores Between Experimental and Control Groups

	t-Value	
Expansion/Control		
Peabody Picture Vocabulary Test	.8558	N.S.
ability to count	1.465	$p < .10$
mean length of utterance	.3447	N.S.
Modeling/Control		
Peabody Picture Vocabulary Test	.5321	N.S.
ability to count	1.700	$p < .10$
mean length of utterance	-1.520	$p < .10$
Expansion/Modeling		
Peabody Picture Vocabulary Test	.2680	N.S.
ability to count	.0543	N.S.
mean length of utterance	1.689	$p < .10$

Instead of testing the significance of the amount of mean gain, counting the number of subjects who demonstrated an increase would determine the probability of obtaining that many or more changes in one direction by chance alone.

Tables 4 and 5 present the Sign Test for correlated samples (Siegel, 1956) for the combined scores of the expansion and modeling groups and the Sign Test for the control group scores. The sample size was reduced in cases of zero difference.

For the combined scores for expansion and modeling groups, the probability of this proportion of subjects showing growth was $<.05$ for the measurement of the ability to count, $<.01$ for the measurement on the Peabody Picture Vocabulary Test, and no difference from chance on the subject's mean length of utterance count. In contrast the probability of this proportion of subjects showing growth for the control group was due solely to chance for all indices of language measurements.

The significant data indicates that the treatments, both for modeling and expansion, were the result of reliable dependent measures and not by chance. It gives encouragement that a partially controlled linguistic environment can systematically enhance and increase a child's acquisition of language. Two of the three dependent variables resulted in statistical significant data, strengthening the conclusion

Table 4. Sign Test of Direction of Change in Individual Scores on Three Language Measures for Combined Expansion and Modeling Group Scores

Test	Pretest < Posttest	N
Mean length of utterance	8 ($p < .760$)	18
Ability to numerically count	13 ($p < .001$)	14
Peabody Picture Vocabulary Test	12 ($p < .072$)	17

Table 5. Sign Test of Direction of Change in Individual Scores on Three Language Measures for Control Group Scores

Test	Pretest < Posttest	N
Mean length of utterance	4 ($p < .212$)	9
Ability to numerically count	2 ($p < .812$)	5
Peabody Picture Vocabulary Test	5 ($p < .500$)	9

that the increased mean scores are not due to unaccountable extraneous variables, but to the exposure to the resepctive treatments.

CHAPTER 4

SUMMARY AND DISCUSSION

On the basis of the results, none of the three research hypotheses were confirmed:

(1) The first research hypothesis stated that children viewing the television segments containing expanded material will show a greater language growth than will children receiving neither treatment. The second research hypothesis stated that children viewing the television segments containing modeled material will show a greater language growth than will children receiving neither treatment. On the parametric analysis there was no significant evidence of the superiority of expansion or modeling over the control group. On the non-parametric analysis of gain scores there was such evidence, but this may be partially explained by the random assignment of the initially most capable children to the control group.

(2) The third research hypothesis stated that of the two treatments, children viewing the television segments containing expanded material will demonstrate a greater language growth than will children viewing the modeled material. This hypothesis is partially supported by this

research. Not all of the dependent variables indicated a greater effect for expansion, but the mean length of utterance, which was previously noted as being possibly the most valid measure of language growth, did give significant evidence in support of expansion.

The results, tentative as they are due to the small sample, have implications for further research in a child's acquisition of grammar. But first, a plausible explanation for the lack of significant data.

Four explanations might be offered:

1) The internal reliability of the assistants administering the tests for the dependent variables could have been low. Compensation for this factor was attempted through randomization. Results would indicate that randomization did not alleviate this influence.

2) Children's language develops in spurts. Motor skill development takes precedence over verbal skill development. It is possible that some of the children, during the course of the experiment, had reached a plateau concerning their language development. If random assignment placed them in the same group, lack of spontaneous growth would then be attributed improperly to that treatment. It is difficult to determine if this plateau phenomenon was in effect with such a small sample.

3) The fact that the subjects in the control group were more advanced according to the pretest scores may indicate prior presence of a level of exposure to language in their non-treatment environment. Since the home environments were not researched for any of the subjects, this influence was again subjected to randomization. This process of random assignment failed to produce equal initial levels in the pretest.

4) The exposure situation existed only ten days resulting in a maximum of twenty-fifteen minute exposures. It is possible and probable that it takes more than this amount of time for such a young child to demonstrate achievement in a linguistic skill. Analysis was based on overt demonstration of a child's linguistic ability. If there was no verbal evidence of a child's ability, it was assumed the child did not possess that skill. This procedure could easily have not tapped a child's full linguistic range. Verbal measures are presently the only method available for ascertaining a child's verbal linguistic abilities.

Probably the full explanation is some combination of the above four explanations.

Ideally, this study should be replicated with a much larger sample representing many more levels of initial language abilities. Also, the duration of the study should be extended.

The results of this study support the recommendation that increased and well-formed verbal stimulation can facilitate a young child's acquisition of syntax. The verbal environment of a child can be enriched through television viewing--both in quality and quantity.

Anyone considering the implications of this study should keep in mind two qualifications on its generality. First, the increased exposure to language was provided via television where there is both video and audio exposures. Assumptions can not be drawn that these results would be the same for exposure to other sources of electronic media.

Second, Sesame Street provided the children with understandable linguistic stimulation. These findings provide no insight into the effects of uncomprehensible verbal exposure, regardless of its source.

APPENDICES

APPENDIX A

RESEARCH POLICY

1. All requests for research to be conducted in the preschool units or day care units must first be approved by the Preschool Committee, as well as other research committees as deemed necessary by the respective preschool or day care unit. Preschool units and day care units subject to these policies are those known as:

   Laboratory Preschool
   Married Students Activities Unit-Day Care Center
   Spartan Cooperative Nursery and Day Care Center

2. Steps for preparing applications for research:

   a) Secure and complete 5 copies of the "Application for Research" form. This form is available from the office of the Institute for Family and Child Study.

   b) For theses and dissertation research and related pilot research written approval of the study must be presented. Approval can be obtained from the major faculty research advisor, in the case of pilot research, or from the thesis research committee, in the case of the actual thesis research. In other words, a thesis or dissertation proposal must first be approved at the department level before it will be accepted for review by the Preschool Committee. Acceptance at the department level does not constitute automatic approval by the Preschool Committee.

   c) All research procedures must conform to the guidelines for human research as published by the USPHS; or, the American Psychological Association; or the Society for Research in Child Development; or, any similar set of guidelines appropriate to a particular professional discipline. It is the investigators responsibility to be familiar with ethical procedures for research with human subjects.

      The committee will reject any proposal that does not adequately reflect how the health, safety and welfare of children will be provided for.

Applicants must submit along with the "Application for Research" a sample of the letter to be sent to parents or whatever individual or institute assumes in loco parentis, detailing matters of informed consent and general health and safety.

d) Applications must be submitted at least 30 days before the end of the term preceding the requested starting date. (The "end of the term" is defined as the last day of University classes.) This does not assure that the committee will be able to honor the requested starting date. The committee's decision as to when a particular study may be conducted will be delegated to the Assistant Director for Early Childhood Laboratories in conjunction with the particular laboratory Coordinator(s) involved. Researchers must bear in mind the need for lead times to contact the necessary boards, teachers, parents, etc. The Assistant Director of Early Childhood Laboratories decision will be made on the basis of protecting the rights of children, in the units to have a full, sound and quality educational experience.

e. The Committee reserves the right to seek additional review of any proposal when it considers additional "expert" opinion to be desirable. The Committee may take on this task or may request the investigator to seek additional information.

f) Composition of the Preschool Research Committee:
1 representative from the research's primary department.
1 representative from an outside department.
1 staff member of the Institute for Family and Child Study, The Assistant Director of Early Childhood Laboratories.
The above members of the review committee shall be drawn from the current membership of the Preschool Committee.

Plus: 1 parent (or more) from the appropriate parent board.

Plus: any other university or community consultant the committee deems desirable.

g) Action: Upon approval of the research project, the approved application will be sent to the Assistant Director of Early Childhood Laboratories who in conjunction with the unit coordinators will make final judgment as to the starting date.

h) The Assistant Director of Early Childhood Laboratories will have the responsibility for overall integration of the review committee membership and review procedures.

i) Twenty copies of 1-page (single spaced, typed) summary of results must be filed with the Preschool Committee. Failure to file the summary will preclude future use of the research facilities administered by the Institute for Family and Child Study. Investigators are reminded that parents also should receive a summary of research findings either directly from the investigator or through some other appropriate means.

   All researchers shall give only general results (not individual data) to parents, unless an exception to this rule is agreed upon by the Preschool Committee in conjunction with the Unit Coordinator and teachers of the lab involved.

j) Applications should be submitted to the Assistant Director of Early Childhood Laboratories of the Institute for Family and Child Study.

APPENDIX B

RULES FOR CALCULATING MEAN LENGTH OF UTTERANCE

1. Start with the second page of the transcription unless that page involves a recitation of some kind. In this latter case start with the first recitation free stretch. Count the first 100 utterances satisfying the following rules.

2. Only fully transcribed utterances are used; none with blanks. Portions of utterances, entered in parentheses to indicate doubtful transcription, are used.

3. Include all exact utterance repetitions (marked with a plus sign in records). Stuttering is marked as repeated efforts at a single word; count the word once in the most complete form produced. In the few cases where a word is produced for emphasis or the like (no, no, no) count each occurrence.

4. Do not count such fillers as mmm or oh, but do count no, yeah, and hi.

5. All compound words (two or more free morphemes), proper names, and ritualized reduplications count as single words. Examples: birthday, rackety-boom, choo-choo, quack-quack, night-night, pocketbook, see saw. Justification is that no evidence that the constituent morphemes function as such for these children.

6. Count as one morpheme all irregular pasts of the verb (got, did, went, saw). Justification is that there is no evidence that the child relates these to present forms.

7. Count as one morpheme all diminutives (doggie, mommie) because these children at least do not seem to use the suffix productively. Diminutives are the standard forms used by the child.

8. Count as separate morphemes all auxiliaries (is, have, will, can, must, would). Also all catenatives: gonna, wanna, hafta. These latter counted as single morphemes

rather than as going to or want to because evidence is that they function so for the children. Count as separate morphemes all inflections, for example, possessive (s), plural (s), third person singular (s), regular past (d), and progressive (in).

Source: Roger Brown, A First Language, The Early Stages, Harvard University Press, Massachusetts, 1973, p. 54.

APPENDIX C

RULES OF ADMINISTRATION
(Peabody Picture Vocabulary Test)

1. This individual test should be given in a quiet room away from others.

2. The examiner should be business-like, pleasant and encouraging.

3. To motivate the subject to do his best, praise should be given generously. Such comments as the following have been found effective: GOOD! YOU ARE DOING WELL, etc. However, praise can be overdone. Many individuals know when they are beyond their depth and are not deceived by unearned praise.

4. Even when an incorrect response is made, encouragement should be given. If the subject says, "Did I get that one right?" say: THAT WAS A GOOD ANSWER.

5. Directions to the testee should be read verbatim, rather than given from memory.

6. It is not permissible to show the subject the printed stimulus words, to use them in sentence, to define or spell them.

7. Stimulus words may be pronounced aloud more than once by the examiner. In cases where two pronunciations are accepted in a community, these alternates may be used.

8. With only a few exceptions, stimulus words are in the singular. So do not convert them to the plural, since this may provide a cue to the subject on certain plates where only one plural condition exists; i.e., keys.

9. Never precede the stimulus word by an article (a, an, the). This rule was established to prevent giving cues since only nouns are introduced by articles.

10. The subject may take any reasonable amount of time per item to make his selection. However, after approximately one minute, he should be encouraged to make a choice. Say: TRY ONE. POINT TO ONE OF THEM. Always secure a response. Do not record "no response" or "don't know". There is no penalty for guessing on this test.

11. Some of the subjects, especially the younger ones, may point to one corner on plate after plate. It is therefore necessary to repeat frequently BE SURE TO LOOK CAREFULLY AT ALL FOUR PICTURES. If the child continues to do this the examiner should point to picture No. 1 saying LOOK AT THIS ONE, then to picture No. 2 saying AND THIS ONE; then to picture No. 3 saying AND THIS ONE; then to picture No. 4 saying AND THIS ONE.

12. When the subject spontaneously changes his choice, record the final response.

13. For subjects who use the pointing response, precede each stimulus word when starting the test with one of the following: PUT YOUR FINGER ON _____. CAN YOU FIND ____? SHOW ME ____. POINT TO _____. FIND _____. WHERE IS _____?

Introduce the test by saying: I WANT TO PLAY A PICTURE GAME WITH YOU. Turn to Example A and say: SEE ALL THE PICTURES ON THIS PAGE. (Indicate this by pointing to each in turn.) I WILL SAY A WORD, THEN I WANT YOU TO PUT YOUR FINGER ON THE PICTURE OF THE WORD I HAVE SAID. LET US TRY ONE. PUT YOUR FINGER ON "BED". When the subject makes the desired response, turn to Example B saying: THAT'S FINE. NOW PUT YOUR FINGER ON "FISH". Then turn to Example C saying: GOOD! SHOW ME "BUTTERFLY". Then say: FINE. NOW I AM GOING TO SHOW YOU SOME OTHER PICTURES. EACH TIME I SAY A WORD, YOU FIND THE PICTURE OF IT. WHEN WE GET ALONG FURTHER IN THE BOOK YOU MAY NOT BE SURE YOU KNOW THE WORD, BUT I WANT YOU TO LOOK CAREFULLY AT ALL OF THE PICTURES ANYWAY AND CHOOSE THE ONE YOU THINK IS RIGHT. POINT TO _____.

Source: Peabody Picture Vocabulary Test, Lloyd M. Dunn, American Guidance Service, Inc., Minneapolis, Minnesota.

APPENDIX D

SCORING PROCEDURE FOR PEABODY PICTURE VOCABULARY TEST

Basal and Ceiling

From the starting point work forward (begin on plate No. 1) until the subject makes his first error. Continue testing forward from the point of the first error until the subject makes 6 errors in any 8 consecutive presentations; count the last item presented as his ceiling. The basal in this case with these children will be 1.

The test is discontinued when a basal and ceiling have been established.

To establish easily the basal, ceiling and errors, indicate incorrect responses by drawing a line through the item number, i.e.,

28 1 (1) kite

~~29~~ 2 (1) rat

The total raw score is the number of correct responses. To get the total raw score, subtract the errors from the number of the last item presented, or ceiling item.

To compute the subject's chronological age, use the appropriate space on the sheet. The days are dropped unless they are more than 15, in which case an extra month is added to the age.

FORM A

PEABODY PICTURE VOCABULARY TEST

INDIVIDUAL TEST RECORD

NAME _____ (Last) _____ (First) _____ (Initial) SEX: M F (circle) GRADE _____

SCHOOL _____ (or address) _____ TEACHER _____ (or parent or phone) _____

CALCULATION		DERIVED SCORES		YEAR	MONTH	DAY
Ceiling item		Mental Age (M. A.)		Date		
Errors		Intelligence quotient (I.Q.)		Born		
Raw score		Percentile	(%ile)	Age		

EXAMINER _____ TIME _____ CODE _____

JAN. 1 FEB. 2 MARCH 3 APRIL 4 MAY 5 JUNE 6 JULY 7 AUG. 8 SEPT. 9 OCT. 10 NOV. 11 DEC. 12

TEST BEHAVIOR

Examples needed:	only 1	2 or 3	over 3
Type of response:	Subject pointed	S. called numbers	Examiner pointed
Rapport:	easily attained	slowly attained	poor rapport
Guessing:	prone to guess	guessed when asked	resisted guessing
Speed of response:	fast	average	slow
Verbalization:	talkative	average	taciturn
Attention span:	distractible	average	very attentive
Perseveration:	none noted	some	frequent
Need for praise:	little needed	some needed	much needed
Other test behavior:			

PHYSICAL CHARACTERISTICS

Motor activity:	hyperactive	average	hypoactive
Sedation:	none	slight	heavy
Ambulation:	normal	walks with support	none
Speech:	intelligible	fairly intelligible	unintelligible
Hearing: necessity to repeat stimulus words	never	seldom	often
	S. wore hearing aid	S. watched examiner's lips and face closely	
Vision: distance of eyes from page	under 8"	average (8"-20")	over 20"
	S. wore glasses	S. owned but did not wear glasses during test.	

Other physical characteristics:

OTHER INFORMATION (previous tests, dates, scores etc.; teacher estimates of vocabulary, intelligence, achievement; school or work record)

American Guidance Service, Inc. Publishers' Building, Circle Pines, Minnesota 55014

Litho in U.S.A.

FORM A

NAME _____

Item	Resp.	Key	Word
1	———	(4)	car
2	———	(3)	cow
3	——	(1)	baby
4	——	(2)	girl
5	——	(1)	ball
6	———	(3)	block
7	———	(2)	clown
8	———	(1)	key
9	——	(4)	can
10	——	(2)	chicken
11	——	(4)	blowing
12	——	(2)	fan
13	——	(1)	digging
14	——	(1)	skirt
15	——	(4)	catching
16	——	(1)	drum
17	——	(3)	leaf
18	———	(4)	tying
19	———	(1)	fence
20	———	(2)	bat
21	———	(4)	bee
22	———	(3)	bush
23	——	(1)	pouring
24	——	(1)	sewing
25	——	(4)	wiener
26	——	(2)	teacher
27	——	(3)	building
28	——	(3)	arrow
29	——	(2)	kangaroo
30	——	(3)	accident
31	———	(3)	nest
32	——	(4)	caboose
33	——	(1)	envelope
34	——	(2)	picking
35	———	(1)	badge
36	———	(3)	goggles
37	——	(2)	peacock
38	——	(3)	queen
39	——	(4)	coach
40	——	(1)	whip
41	——	(4)	net
42	——	(4)	freckle
43	——	(3)	eagle
44	——	(2)	twist
45	——	(4)	shining
46	——	(2)	dial
47	——	(2)	yawning
48	——	(2)	tumble
49	——	(1)	signal
50	——	(1)	capsule
51	——	(4)	submarine
52	——	(4)	thermos
53	——	(3)	projector
54	——	(4)	group
55	——	(3)	tackling
56	——	(1)	transportation
57	——	(1)	counter
58	——	(2)	ceremony
59	——	(3)	pod
60	——	(4)	bronco
61	——	(3)	directing
62	——	(4)	funnel
63	——	(2)	delight
64	——	(3)	lecturer
65	——	(2)	communication
66	——	(4)	archer
67	——	(1)	stadium
68	——	(1)	excavate
69	——	(4)	assaulting
70	——	(1)	stunt
71	——	(1)	meringue
72	——	(3)	appliance
73	——	(4)	chemist
74	——	(3)	arctic
75	——	(4)	destruction
76	——	(3)	porter
77	——	(2)	coast
78	——	(4)	hoisting
79	——	(1)	wailing
80	——	(2)	coil
81	——	(3)	kayak
82	——	(2)	sentry
83	——	(4)	furrow
84	——	(1)	beam
85	——	(3)	fragment
86	——	(2)	hovering
87	——	(3)	bereavement
88	——	(4)	crag
89	——	(2)	tantrum
90	——	(1)	submerge
91	——	(3)	descend
92	——	(2)	hassock
93	——	(1)	canine
94	——	(1)	probing
95	——	(1)	angling
96	——	(3)	appraising
97	——	(4)	confining
98	——	(4)	precipitation
99	——	(1)	gable
100	——	(1)	amphibian
101	——	(3)	graduated
102	——	(2)	hieroglyphic
103	——	(1)	orate
104	——	(3)	cascade
105	——	(4)	illumination
106	——	(1)	nape
107	——	(2)	genealogist
108	——	(2)	embossed
109	——	(4)	mercantile
110	——	(2)	encumbered
111	——	(4)	entice
112	——	(3)	concentric
113	——	(3)	vitreous
114	——	(1)	sibling
115	——	(2)	machete
116	——	(4)	waif
117	——	(1)	cornice
118	——	(3)	timorous
119	——	(1)	fettered
120	——	(2)	tartan
121	——	(3)	sulky
122	——	(4)	obelisk
123	——	(2)	ellipse
124	——	(2)	entomology
125	——	(4)	bumptious
126	——	(2)	dormer
127	——	(2)	coniferous
128	——	(4)	consternation
129	——	(3)	obese
130	——	(4)	gauntlet
131	——	(1)	inclement
132	——	(1)	cupola
133	——	(2)	obliterate
134	——	(3)	burnishing
135	——	(1)	bovine
136	——	(4)	eminence
137	——	(3)	legume
138	——	(4)	senile
139	——	(2)	deleterious
140	——	(4)	raze
141	——	(2)	ambulation
142	——	(1)	cravat
143	——	(2)	impale
144	——	(4)	marsupial
145	——	(3)	predatory
146	——	(1)	incertitude
147	——	(2)	imbibe
148	——	(3)	homunculus
149	——	(4)	cryptogam
150	——	(3)	pensile

APPENDIX F

STATEMENT OF INSTRUCTIONAL GOALS FOR
NUMBERS GOALS ON SESAME STREET

Numbers Goals

1. Numbers 1-20

   a. Matching - Given a printed numeral the child can select the identical numeral from a set of printed numerals.

   b. Recognition - Given the verbal label for a numeral the child can select the appropriate numeral from a set of printed numerals.

   c. Labelling - Given a printed numeral the child can provide the verbal label.

   d. Recitation -

      1. The child can recite the numbers from 1 to 20.

      2. Given a starting point under ten the child can count from that number to any given higher number up to ten (ex. count from 3 to 8).

2. Numerical Operations

   a. Enumeration - The child can define a set or subset of up to 10 objects from a larger set.

      ex. 1. "Here are some pennies? How many are there?"

      ex. 2. "Here are some pennies. Take Two."

      1. The child can recognize that the last number reached in counting is the total number in the set: ex. "Count the pennies. How many are there?"

2. The child can make use of counting strategies (ex. when counting objects arranged in a circle the child will identify the first object counted by marking it, moving it or noting a distinguishing characteristic of that object).

b. Equality - The child can perform the appropriate operations needed to balance an equation.

1. Conservation of Number - The child can match sets of equal numbers regardless of configuration (ex. 000 = 0).
0 0
2. Numeral/Number Correspondence - The child can assign the correct numeral to sets of differing numbers (ex. 000 goes with the numeral "3").

c. Addition & Subtraction - The child can add or subtract 1 or more objects from any group of less than 10 objects.

Source: Bogatz & Ball, The Second Year of Sesame Street: A Continuing Evaluation, Vol. 1, 1971.

APPENDIX G

GUIDELINES FOR LETTERS TO PARENTS FROM RESEARCHERS

(Drafted November 1973 by Preschool Committee)

The following areas are to be covered in order:

a) Nature of research.

b) Name of early childhood lab to be used.

c) What researcher will be doing (i.e., exactly what will be expected of the child, what implications will it have on the child's program experience.

(Ex. - takes 5 minutes during free play, etc.)

d) Emphasize idea research is to see what the "normal child" does in the situation.

e) Emphasize confidentiality, privacy of results.

f) List permission procedure--who has approved the study? If funded list source.

g) Who is to be called if they have further questions, phone number.

h) State how, where and when summary results of study (summary statement, etc.) may be obtained by parents.

Note: All research results must be given in general form. No specific scores or results for an individual child may be given to a parent or another individual unless an exception is granted, in writing, by the Preschool Committee in conjunction with the Coordinator and teachers of the lab involved.

APPENDIX H

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

DEPARTMENT OF TELEVISION AND RADIO • 322 UNION BUILDING

April 12, 1974

Dear Parent,

I am a graduate student in the Television and Radio Department at Michigan State University. My other field of study is child development. I am working in conjunction with the Television and Radio and Psychology Departments to complete a study on language acquisition.

The children participating in this study will be given the Peabody Picture Vocabulary Test (PPVT) during their regular class time. This will only take 10 to 15 minutes to administer. By pre-recording each child's speech, a morpheme count and a mean length utterance count will be obtained.

The actual test situation, which consists of viewing specific segments of "Sesame Street" for 15 minutes a day, will begin on May 1, 1974 and run for 18 consecutive days. It is vital to the outcome of the experiment that the parents cooperate on this factor and agree to come on the weekends and days when their child is not normally enrolled in child care. Exposure times will be established for these days. The continuous exposure to the condition is the determining variable in the experiment. Individual performance by a child is not the emphasis of this study, and all results will only be reported in regard to group data.

This study has been approved by the Television and Radio Department; by Andy Gilpin from the Psychology Department; by the Preschool Committee of the Institute of Family and Child Study; and by the Parent Board for the children enrolled at Married Student Activities Unit.

If there are any questions please contact Diane Moholy, 332-6531, 639 M.A.C. Ave, East Lansing.

A summary of the study will be available this spring and mailed to the parents of the children participating in the experiment.

Diane Moholy

Diane Moholy

John D. Abel

Dr. John D. Abel, PH.D.
Faculty Advisor
Department of Television & Radio

APPENDIX I

PERMISSION SLIP

I give permission for _____
name of child
to be given the Peabody Picture Vocabulary Test (PPVT) and to participate in viewing the televised language segments for Diane Moholy's research of language acquisition.

_____
Parent's signature

_____
Date

_____
Telephone Number

PLEASE return by APRIL 19, 1974

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BIBLIOGRAPHY

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