

THE INFLUENCE OF PARENT-CHILD VERSUS CLINICIAN-CHILD INTERACTION ON THE LANGUAGE OF YOUNG LANGUAGE-IMPAIRED CHILDREN

by

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ABSTRACT

It is generally agreed that children often interact differently with familiar versus unfamiliar adults. In a clinical setting, this would be important for a clinician to consider when assessing a language-impaired child. As spontaneous language samples are typically obtained to assess the level of expressive language development of young children, whether the elicitor of the samples is a familiar adult, as the child's parent, or unfamiliar, as the clinician, may be important for ensuring the representativeness of the language sampled. This study examines the effects of the parent versus clinician as the elicitor of language obtained from three to six year old language-impaired children. The results indicated that the parent collected more utterances in a specific time period; no differences in the lexical, grammatic, nor semantic aspects of the utterances were noted under the two conditions. Practical implications for evaluation procedures are provided.

The evaluation of a child's spoken language often consists of obtaining a sample of utterances which is then subjected to informal or formal analysis (Lee, 1974; MacDonald and Nikols, 1975; Bloom and Lahey, 1978). The intention of the speech pathologist is to secure a corpus of utterances which is representative of the child's productive linguistic skills. It is thought that by obtaining the sample of utterances in a natural setting, such as at home, the sample would be a reasonable reflection of the child's linguistic ability. Scott and Taylor (1978) have compared samples of language obtained at home and in a clinical setting and found certain differences in language structure peculiar to each environment. They suggested, however, that these differences appeared to result more from the interactions between child and parent or child and clinician rather than the specific physical environment. Cowan et al (1967) and Cazden (1970) also report that listener variables are important influences on the language productions of children.

One particular aspect of this listener variable which might influence the spoken language of a child is the familiarity of the listener. If, indeed, the presence of the mother, or other familiar adult, would stimulate the child to produce language which is more representative of his linguistic capacities, then it would be of interest to compare the linguistic productions a child produces in a clinical setting with a familiar versus unfamiliar adult (that is, mother versus clinician). In a clinical setting, a language sample is typically elicited by the speech pathologist as one aspect of the evaluation procedures. The effectiveness of the clinician in eliciting this sample might be questioned since the literature suggests that the familiarity of the setting, including the elicitor, may affect the young child's language output. Thus, important and practical questions arise: What are the differences between language samples elicited by mothers and clinicians? Does one of these persons elicit a better language sample than the other? It is the purpose of this study to examine the effects of the elicitor, mother versus clinician, on the language obtained from 3 to 6 year old language-impaired children in a clinical setting.

Table 1
Descriptive summary of subjects

Subject	Age	MLU	Expressive Language ¹	Receptive Language ²	Intelligence ^{3 4}
1	5-9	2.57	30 months (SICD)	36-40 months (SICD)	Normal
2	4-11	2.45	28-32 months (SICD)	28-30 (SICD)	Mildly Retarded
3	4-6	3.00	32-36 months (SICD)	32-36 (SICD)	Normal
4	3-11	2.32	28 months (SICD)	24-28 months (SICD)	Borderline
5	3-8	2.84	32 months (SICD)	3-32 months (SICD)	Normal
6	3-7	1.63	24-28 months (SICD)	30 months (SICD, PPVT)	Normal
7	3-4	1.80	28-32 months (SICD)	28-30 months (SICD, PPVT)	Normal
8	3-3	1.52	24-28 months (SICD)	28-30 months (SICD)	Borderline
9	3-0	1.88	20-24 months (SICD)	24-28 months (SICD)	Borderline

¹Expressive language as measured by the **Sequenced Inventory of Communication Development (SICD)**, D. Hedrick, E. Prather, & A. Tobin, Seattle: University of Washington Press, 1975.

²Receptive language as measured by the **Sequenced Inventory of Communication Development (SICD)**, and the **Peabody Picture Vocabulary Test**, L. Dunn, Circle Pines, Minn.: American Guidance Service, Inc., 1965.

³Nomenclature used by the American Association of Mental Deficiency, J. Sattler, **Assessment of Children's Intelligence**, Philadelphia: W. B. Saunders Co., 1974, p. 302.

⁴Intelligence as estimated by either the **Bayley Scales of Infant Development**, N. Bayley, New York; The Psychological Corporation, 1969, or the **Stanford-Binet Intelligence Scale**, L. M. Terman, New York: Houghton-Mifflin Co., 1960.

METHOD

Subjects

Nine language-impaired children, five males and four females, ranging in age from 3 to 6 years served as subjects. All subjects visited the Child Development and Mental Retardation Center at the University of Washington twice and were accompanied by their natural mother. The children were referred to the center for an interdisciplinary evaluation of their developmental skills, including speech and language. The language sampling procedures discussed below were used as part of the speech and language diagnostic evaluation. The referrals, originating from schools or parents, were in part based on concerns regarding delayed language development. The subjects were selected for this study if their mean length of utterance (MLU) was between 1.5 and 3.0 morphemes, roughly comparable to Brown's (1973) Stage I and early Stage II of linguistic development. Four of the children, age 3-0 to 3-5, were using only one and two word utterances. The remaining five, age 3-7 to 6-0, were generating primarily three word utterances and were using some early emerging grammatical morphemes. Children who had previously experienced speech and language evaluations or therapy were excluded from the study. Hearing sensitivity for all children was normal. No additional constraints were placed on subject selection, since it is the intention that the results of this study be applicable to a variety of language-impaired children. A descriptive summary of the subjects is provided in Table 1.

Procedures

Two language samples were obtained from each subject under two conditions: (a) language elicited by the child's mother, and (b) language elicited by an unfamiliar, female clinician. The two samples were collected within a one week period, and the order of the collection conditions was counterbalanced. Collection of the language samples occurred in a sound-treated room normally used for speech and language evaluations. The room was visually austere and contained no windows, pictures, toys or other materials except those described below. During the procedures, only the mother and child, or the clinician and child were in the experimental room.

The sessions were recorded through a two-way mirror on videotape and monitored by the experimenter from an adjacent control room. The video-tapes were used later to transcribe the language sample, thus providing contextual information corresponding to the child's linguistic utterances. Both the clinician and parent had access to the following materials to be used for language stimulation during the session: Fisher-Price doll house, camper and Sesame Street play family toys, and two books, (Scarry, 1963; Kent, 1974). Each language sampling condition lasted for 25 minutes, a time period selected as representing a reasonable portion of a speech and language sample.

Mother and Child Condition. The mother and child were brought to the experimental room and seated at a table. The mother was told what toys were available and shown their location in the room. This allowed the mother to select the materials for use when she deemed them appropriate. The mother was instructed to play with her child as she normally does at home. It was further explained that this portion of the diagnostic session would allow the clinician to view the child communicating with a familiar person, so that a typical sample of speech might be collected. Finally, the parent was told that she was to play with her child until the experimenter returned to the room, which would be approximately 25 minutes.

Clinician and Child Condition. The subject was brought to the evaluation room by the clinician and seated at a table. After approximately a 15 minute warm-up period, the clinician selected one of the elicitation materials and encouraged the child to begin playing and talking about what he was doing. The clinician participating in this study was a speech pathologist who has had extensive experience collecting language samples. She followed a strategy for stimulating language production based primarily on the

guidelines outlined by Lee (1974, pp. 57-62) for collecting a language sample in a clinical setting. Generally, the clinician utilized parallel play techniques, playing along with the child, following his lead rather than directing him. The clinician's comments were primarily descriptive, talking about her actions and the child's, while holding questions to a minimum. The clinician and child interaction continued for 25 minutes, following the warm-up period.

Transcript preparation

Following each session, a transcript of the adult-child interaction was prepared from the videotape recording. The transcript contained all utterances produced by the child. In addition, the transcript contained adult utterances and description of nonlinguistic events which occurred during, immediately prior to, or immediately following each child utterance; this information was used where necessary for interpreting the child utterances. A corpus of non-imitated, intelligible utterances for each subject under each 25 minute condition was used for analysis. For this study, an utterance was defined as a unit of spoken language preceded and followed by a perceived pause or terminated by some change in inflection (rising or falling intonation) (Engler, Hannah and Longhurst, 1973). Since imitations were excluded from the analysis of the children's spontaneous language the following criteria (Bloom, Hood, and Lightbown, 1974) were used to define an imitated utterance: (a) the child repeated spontaneously or was asked or prompted to repeat; (b) the child repeated all or part of a preceding model utterance from the adult's utterance; (c) the child did not add or change the adult model, except to reduce it by leaving out part of the adult's utterance; or (d) less than three utterances (from the child or adult) intervened after the model. All other utterances were considered non-imitated or spontaneous productions, and analyzable.

Data Analysis

Based on the linguistic levels of the nine 3 to 6 year old children, measures were selected to analyze the language samples which would best reflect the linguistic performance of a child in Brown's Stage I and Stage II. Some of the critical aspects of the children's early language skills include amount of talking (numeric aspect), vocabulary size (lexical aspect), the emergence of grammar or grammatical morphemes (grammatical aspect), and the production of meaningful relationships between words (semantic aspect). To quantify these four areas of emergent language, 21 measures were utilized in analyzing each language sample. Reliability of the analysis procedures was determined by having the two investigators independently score each of the measures on a sample of 15 utterances selected from three language samples chosen at random. The percent agreement between judges follows the description of each of the measures. An explanation of these measures is as follows.

Numeric aspect

1. Total number of analyzable utterances. This measure was selected to determine if the particular elicitor influenced the quantity of language produced in a given time period. The total number of analyzable utterances collected in the 25 minute time period was computed for each language sample. The percent agreement between the two judges, independently calculating the total number of analyzable utterances was 100%.
2. Vocabulary type-token ratio (VTTR). Johnson (1944) first used this measure to examine the speaker's flexibility or variability in vocabulary usage and Broen (1972) has recently used it to examine differences in the speech of mothers interacting with young children versus older children. This measure was computed as the ratio of the number of different words (types) to the total number of words (tokens) in a given sample. As vocabulary becomes more diverse, the ratio increases. The percent agreement between the two judges, independently calculating VTTR, was 100%.
3. Mean length of utterance (MLU). This measure was used to obtain an indication of

variation in utterance length and grammatic complexity. The mean length of utterance, or average number of morphemes per utterance was computed by dividing the total number of morphemes by the total number of utterances for each language sample. Brown's (1973) procedures were utilized to calculate MLU with the following rules added:

- a. "Yes" and "no" counted as one morpheme, even when not part of a longer utterance, when used as an appropriate answer to a yes/no question.
- b. Partially intelligible utterances were not counted.
- c. Sounds used as labels, as "moo moo" for "cow" counted as one morpheme.

The percent agreement between the two judges, independently calculating MLU, was 83%.

4. Percentage of one morpheme utterances.

5. Percentage of two morpheme utterances.

6. Percentage of three or more morpheme utterances. These three measures were selected to further quantify progress toward increasing utterance length. If a child were to use utterances of a particular length with either mother or clinician as elicitor, this measure would reflect such a trend. Thus, for each language sample the percentage of one morpheme, two morpheme and three or more morpheme utterances, of the total number of utterances per language sample was computed. Inter-judge reliability for these three measures was 100%, 92%, and 85% respectively.

7. Proportion of grammatical morphemes per utterance. As the subjects of this study were by definition in Brown's Stage I and Stage II level of language development, it was felt that another measure of emerging grammar would be useful in analyzing the language elicited from each child. According to Brown, the emergence of grammatical morphemes reflects grammatic growth, a Stage II phenomenon; thus, the proportion of Brown's 14 grammatical morphemes (Appendix A) per utterance was computed for each language sample by dividing the number of grammatical morphemes used, by the number of utterances in each language sample. The inter-judge reliability for this measure was 100%.

Semantic aspect

To examine the semantic intention conveyed by the child's language, each of the analyzable utterances was categorized into one of the following 13 semantic categories (See Appendix B for complete derivation).

- (1) nomination
- (2) recurrence
- (3) negation
- (4) agent + action
- (5) action + object
- (6) action + modifier
- (7) agent + object
- (8) agent + stative
- (9) stative + object
- (10) static locative — x + locative
- (11) dynamic locative — action + locative
- (12) possessive
- (13) entity + attribute

As described by MacDonald and Nikols (1975, p. 31), a given multiple word utterance could be scored with several semantic rules. Each possible two-word combination that expressed a meaningful relation was classified into one of the above semantic categories: this was true even if the two words were separated by other words. For example, "boy throw ball" would be categorized agent + action, action + object, and agent + object. The semantic categories used for this study are based on those formulated primarily by Brown (1973), Bloom (1973) and Edwards (1974). The utterances were classified based on information regarding the context surrounding each utterance. A category for unclassifiable utterances was also included. The interjudge reliability for classifying utterances into the above 13 semantic categories was 93%. To examine semantic variability in the child's speech, the following measures were computed.

8. Percentage occurrence of semantic categories. This measure was selected to determine elicitor effects on the variety of semantic relations used by a child. The measure expresses the percentage of the 13 semantic categories which appeared in a child's corpus. For example, if a language sample contained five of the 13 semantic categories, then the percentage occurrence of the thirteen semantic categories would be 38%. The interjudge reliability for this measure was 100%.

9-21. Type-token ratio for each of the 13 semantic categories. To further examine semantic variation for each subject, a type-token ratio was computed for each of the 13 semantic relations as described in Appendix B. This ratio compared the number of different utterances in a given semantic relation (type) to the total number of utterances expressing that relation (token). For example, if a child used a total of 50 action + object relations (token) and 25 of these were different two-word combinations (type), then the type-token ratio for action + object would be .50. This ratio would increase with variety in different utterances.

RESULTS

Data Analysis

By utilizing subjects as their own controls, the following design was employed: the independent variable was the elicitor, mother versus clinician; the dependent variable was language, of which 21 measures were examined. The significance of the differences between the group means on each of these measures was compared with a two-tailed t-test for matched pairs. When performing such a large number of t-tests in one experiment, the probability of a Type I error increases, i.e., the probability that at least one or more comparisons will be declared significant when, in fact, the null hypothesis is true for all comparisons. To reduce the probability of this type of an error, the level significance was specified at .01. The two tailed t-test (Tuccy) for matched pairs in the prepackaged statistical analysis program **Statistical Package for the Social Sciences** (SPSS), (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975) was used to analyze the data.

Mean values for the first eight language variables (numeric, lexical, grammatic and semantic) are presented in Table 2. The mean type-token ratios for each semantic category (variables 9-21) are presented in Figure 1.

Only the dependent variable measuring total number of utterances was significantly different between elicitation conditions; with mother as elicitor, significantly more utterances were collected in the 25 minute time period than with clinician as elicitor ($t = 4.01$; $df = 8$; $p < .01$). An inspection of the data for subject variation that might not be reflected in the statistical analysis revealed no extreme scores. Thus, it appears that the data presented in Table 2 and Figure 1 reflects the performance of each subject and does not appear to be masking individual differences of any clinical significance.

Table 2

Mean values for dependent variables 1-8 under each elicitation condition

Dependent Measures (1-8)	Elicitor	
	Mother	Clinician
Numeric		
1. Number of utterances	107.33	78.56*
Lexical		
2. Vocabulary type-token ratio	0.39	0.41
Grammatical		
3. Mean length of utterance	2.23	2.22
4. % of 1 morpheme utterances	31.32	29.64
5. % of 2 morpheme utterances	33.19	33.07
6. % of 3 or more morpheme utterances	35.49	34.80
7. Proportion grammatical morphemes per utterance	0.27	0.24
Semantic		
8. Percentage occurrence of semantic categories	89.90	85.61

*p < 0.01

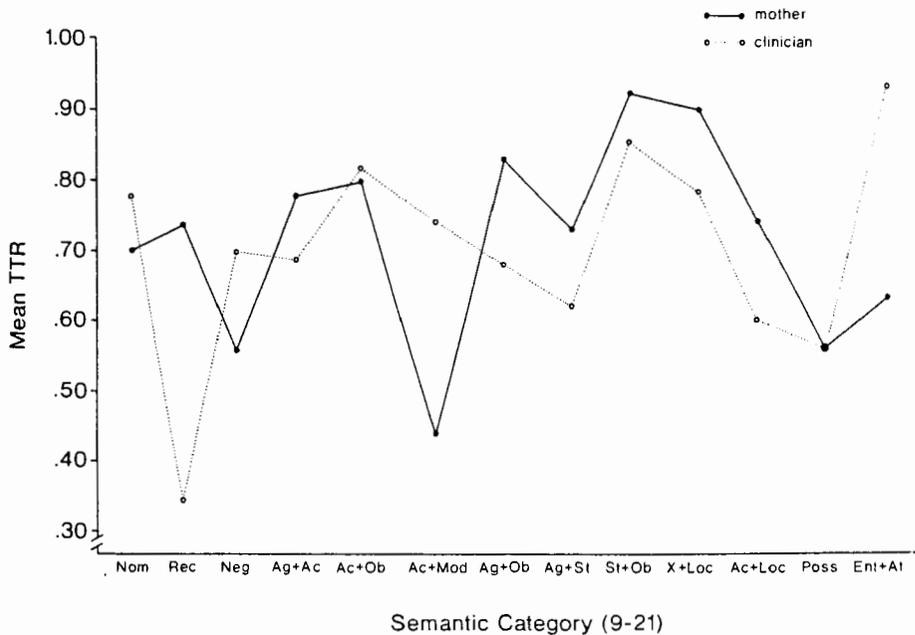


Figure 1. Mean type-token ratios for the semantic categories (variables 9-21) coding relational meanings.

Post Hoc Analysis

Although the study was not designed to examine specific aspects of elicitor verbal behavior which might affect the language output of the children, it seemed worth considering whether the above results might be related to this variable. To explore this aspect of the elicitation procedure, two three-minute samples of elicitor verbal behavior were randomly selected from each mother-child and clinician-child videotape for analysis. These samples accounted for slightly less than one-fourth of the data. Table 3 presents ten measures of elicitor verbal behavior and the mean scores calculated for each. These mean values were compared between the experimental conditions using the two-tailed t-test for independent measures. As Table 3 indicates, only three of the ten comparisons yielded significant differences which might have influenced the children's language output. The mothers asked significantly more questions about materials present in the immediate environment ($t = 2.83$; $df = 16$; $p < .05$), whereas the clinician produced significantly more comments about materials immediately present ($t = 5.09$; $df = 16$; $p < .01$) and imitated significantly more child utterances ($t = 2.74$; $df = 16$; $p < .05$).

Table 3
Mean values for a sample of the verbal behaviors
of the elicitors (mothers versus clinician)

Verbal Behavior of the Elicitor	Mother	Clinician
Number of questions about materials present in the immediate environment	26.89	11.22*
Number of declaratives about materials present in the immediate environment	18.33	41.11**
Number of questions about materials not present in the immediate environment	.78	0
Number of declaratives about materials not present in the immediate environment	1.78	.44
Number of imitations	3.33	8.78*
Number of expansions in a declarative form	3.56	4.33
Number of expansions in a question form	2.33	1.33
Number of imperatives	9.00	10.11
Number of semantically neutral acknowledgements (e.g., oh, ok, yes)	5.22	6.44
Total number of utterances	69.11	81.89

* $p < .05$

** $p < .01$

DISCUSSION

The present study was designed to examine differences in the language used by young language-impaired children when they are interacting with a familiar adult (mother) versus an unfamiliar adult (clinician). The results indicated that the major effect of the two elicitors on the language of the children was in the number of utterances collected in a given time period, with mother eliciting more language from her language-impaired child than the unfamiliar clinician. The quality of language used by the child while interacting with both adults was the same. That is, there appeared to be no difference in the lexical, grammatical, or semantic aspects of language used by the child when he was interacting with his mother or the clinician. Moreover, the post hoc analysis of the verbal behaviors of the mothers and the clinician showed them to be quite similar. Although there were three instances wherein significant differences in the verbal behavior of the mothers and the clinician were found, these differences can be clearly traced to the clinician's intentional and deliberate modification of her own verbal behavior. Table 3 reveals that the clinician used significantly fewer questions about materials present in the immediate environment and significantly more declaratives than did the mothers. These differences reflect the protocol being followed by the clinician which stresses that verbal interaction with the child should consist of declarative comments about ongoing activities and asking as few questions as possible. The significantly greater number of imitations of child utterances by the clinician also reflects common elicitation technique whereby repetition of the child's utterances facilitates subsequent transcription from the tape recording.

There are some practical implications to be drawn from the findings of this study. It appears possible for a speech pathologist to interact with a linguistically low-functioning child in a clinical situation and obtain a sample of language similar to that which would be obtained by his mother. In this sense the corpus can be said to be representative of the language the child would ordinarily produce. Knowledge that language samples of some children will be similar regardless of who elicits them is potentially useful since there are many instances in which it is not feasible to have a child's mother elicit a corpus of utterances. For example, the public school clinician could not conveniently enlist mothers to come to school for the purpose of eliciting a language sample. Also, in certain clinical situations many clinicians prefer to conduct a speech and language evaluation without the parent being present. In such instances, it appears that a clinician, using elicitation techniques discussed by Lee (1974), can obtain a valid sample of spoken language from a linguistically low-functioning child.

Our results also suggest that mothers, rather than clinicians, might serve as elicitors of language in a clinic. It has been a bit of traditional clinical wisdom that the tendency of mothers to ask frequent questions (Lee, 1974; Scott and Taylor, 1978) interferes with obtaining a corpus representative of a child's linguistic abilities. If mothers' frequent questions have a potential to bias a language sample, the effect was not observed in this study. Knowledge that mothers can serve as effective elicitors of language in the clinic gives the clinician some flexibility in conducting a speech and language evaluation. With mother serving as elicitor, the clinician has the opportunity to observe parent-child interaction. For example, it might be useful to note the level of language a mother directs toward her language-impaired child. It has been suggested (Shipley, Smith and Gleitman, 1969) that children respond best to language that is only slightly above their language ability. Although there is no evidence that a mother's level of language is casually related to her child's language delay, it certainly would seem reasonable to have a mother reduce the complexity of her language if it were well above her language-impaired child's comprehension level. While mother serves as elicitor, it is also possible to note the frequency with which she grammatically expands (Brown & Bellugi, 1964) or semantically recasts (Nelson, 1975) her child's utterances. Although expansion or recasting utterances have not been shown to clearly facilitate language development in normal children, they may be useful in facilitating language development in language-impaired children (Muma, 1978). Mother-child dialogue or information on the quality

of non-verbal interaction between the mother-child dyad might also be assessed while the mother elicits a language sample. Thus, with mother serving as elicitor, it is possible to obtain a language sample as well as other information which might be useful for diagnosis or subsequent remediation. Finally, since mothers obtained significantly more utterances in a 25-minute time period in our study, it may be that mother is the elicitor of choice for those children who are unusually reticent and untalkative in the clinic.

Of course, it should not be inferred from the above discussion that there are no differences in a corpus obtained by a clinician or a mother. First of all, the results of this study apply to the kind of language-impaired studied, namely, children below six years of age whose mean length of utterance (MLU) ranged from 1.5 to 3.0 morphemes. Although by no means are these children atypical, they none-the-less do not have well developed grammatical systems. Perhaps elicitor effects would appear in children with better developed grammatical or semantic abilities. In fact, Scott and Taylor (1978) did find some grammatical differences in utterances obtained at home by their mothers vis-a-vis utterances obtained at a clinic by a speech pathologist. Their subjects, however, had MLUs ranging from 3.0 to 6.0, thus suggesting grammatical skills far beyond the children that exist in the current study. Second, if different measures had been used to analyze the children's language then elicitor effects might have been demonstrated. It might be, for example, that pragmatic, sociolinguistic measures which analyze the functions of language would reveal differences between the two elicitation conditions. Third, to provide an experimentwise control, a singular clinician using a commonly available procedure for eliciting language samples (Lee, 1974) was used throughout the study. Perhaps if we had used as many clinicians as we had mothers the results would have been different. Finally we can only speculate regarding exactly what aspects of the elicitors' verbal behavior affected the language output of the children since the current study was not designed to determine this. It is apparent, however, that for the kind of language-impaired child used in this study, the clinician can be reasonably confident in obtaining a language sample not unlike that elicited by the child's mother.

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REFERENCES

- Andrews, J. L., **A Comparison of Three Procedures for Obtaining Language Samples from Children Delayed in Language Development.** Unpublished master thesis, Ohio State University, (1974).
- Bloom, L., **One Word at a Time.** Hague, Netherlands: Mouton and Company, (1973).
- Bloom, L., Hood, L., and Lightbown, P., Imitation in language development: If, when and why. **Cognitive Psychology**, 6, 380-420, (1974).
- Bloom, L., Lightbown, P., and Hood, L., Structure and variation in child language. **Monographs of the Society for Research in Child Development**, 40 (2), (1975).
- Bloom, L., and Lahey, M., **Language Development and Language Disorders.** New York: John Wiley & Sons, (1978).
- Broen, P. A., The verbal environment of the language-learning child. **American Speech and Hearing Association Monographs**, (1972).
- Brown, R., **A First Language.** Cambridge, Mass.: Harvard University Press, (1973).
- Brown, R. and Bellugi, U., Three processes in the acquisition of syntax. **Harvard Educational Review**, 34, 133-151, (1964).

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- Cazden, C. B., The neglected situation in child language research and education. In F. Williams (Ed.), **Language and Poverty**. Chicago: Markham Publishing Company, (1970).
- Cowan, P. A., Weber, J., Hoddinott, B. A., and Klein, J., Mean length of spoken response as a function of stimulus, experimenter, and subject. **Child Development**, 38, 191-203, (1967).
- Dale, P. S., **Language Development: Structure and Function**. Hinsdale, Ill.: The Dryden Press Incorporated, (1972).
- Edwards, D., Sensory-motor intelligence and semantic relations in early child grammar. **Cognition**, 4, (2), 395-434, (1974).
- Engler, L. F., Hannah, E. P., and Longhurst, T. M., Linguistic analysis of speech samples: A practical guide for clinicians. **Journal of Speech and Hearing Disorders**, 38, 192-204, (1973).
- Johnson, W., Studies in language behavior: A program of research. **Psychological Monographs**, 56, 1-15, (1944).
- Kent, J., **Hop, Skip and Jump book**. New York: Random House, (1974).
- Labov, W., **The Study of Nonstandard English**. Urbana, Ill.: National Council of Teachers of English, (1970).
- Labov, W., **Sociolinguistic Patterns**. Philadelphia: University of Pennsylvania Press, (1972).
- Lee, L. L., **Developmental Sentence Analysis**. Evanston, Ill.: Northwestern University Press, (1974).
- MacDonald, J., and Blott, J., Environmental language intervention: A diagnostic and training strategy involving rules, context and generalization. **Journal of Speech and Hearing Disorders**, 39, 244-256, (1974).
- MacDonald, J. and Nikols, M., **Environmental Language Inventory: A Semantic-Based Assessment for Training Generalized Instruction** State University Ohio, The Nisonger Center, (1975).
- Muma, J., **Language Handbook**. Englewood Cliffs, N. J.: Prentice-Hall, Inc., (1978).
- Nelson, K. **Facilitating Children's Syntax Acquisition**. Unpublished manuscript, New School for Social Research, (1975).
- Nie, N., Hull, C., Jenkins, J., Steinbrenner, D., and Bent, D., **Statistical Package for the Social Sciences**. Evanston: McGraw Hill, (1975).
- Scarry, R., **Great Big Word Book**. New York: Golden Press, (1963).
- Scott, C. M., and Taylor, A. E., A comparison of home and clinic gathered language samples. **Journal of Speech and Hearing Disorders**, 43, 482-495, (1978).
- Shipley, E., Smith, C., and Gleitman, L., A study in the acquisition of language: Free responses to commands. **Language**, 45, 322-342, (1969).
- Smith, M. E., A study of some factors influencing the development of the sentence in preschool children. **Journal of Genetic Psychology**, 46, 182-212, (1935).

APPENDIX A: BROWN'S 14 GRAMMATICAL MORPHEMES

1. Present Progressive (ing)
2. Preposition **in**
3. Plural
4. Preposition **on**
5. Possessive
6. Past Irregular
7. Articles **a, the**
8. Past Regular
9. 3rd Person Singular
10. Uncontractible Copula
11. Contractible Copula
12. 3rd Person Irregular
13. Uncontractible Auxiliary
14. Contractible Auxiliary

APPENDIX B: SEMANTIC RELATIONS

The first three categories are concerned with early utterances of operations of reference (Brown, 1973), i.e., nomination, recurrence and negation of a referent.

1. **Nomination.** This operation refers to nominal reference to an entity, usually in the form of introducer + entity (Intro + E). This marks the child's naming or identifying in some way, a referent; "either pointing at, looking at or picking up" (Brown 1973, p. 189). Common introducers reported across languages are: "there", "this", "here", "it", "a", and "s" (Brown, 1973). Early questions, as "what this?" are defined as nomination, where "this" is the introducer and "what" stands for the entity. Nomination examples: here baby, baby, it dog.

2. **Recurrence.** "The construction either comments on (declarative) or requests (imperative) 'recurrence' of a thing, person or process . . . it may mean the reappearance of the same referent already seen; it may mean the appearance of a new instance of a referent class of which one instance has already been seen, and it may mean an additional quantity (or 'helping') of some mass of which a first quantity has already been seen" (Brown, 1973, p. 190). The most common form of recurrence is more + entity (more + E), as in "more cookie".

3. **Negation.** This relation usually comes in the form negation + entity (Neg + E) or negation + action (Neg + Act). As discussed by Bloom (1973) the syntactic expression of negation begins with the meaning of nonexistence and then progresses to rejection and denial. Nonexistence can refer to the expected existence or endurance of something or the disappearance or nonexistence of objects or persons that had existed in the context just previously. A simple form of negation can also be used by the child to express rejection or denial of a particular thing. Negation examples: no cookie (as mother puts cookie in a drawer), no milk (as child pushes milk away), no baby (as child shakes head "no" in response to the question "Are you a baby?"), no peek (as child covers mother's eyes).

The following categories define major relations between agents, actions, and objects, as discussed primarily by Brown (1973), Edwards (1974), and Bloom, Lightbown and Hood (1975).

4. **Agent + action.** In Brown's discussion of agent, he refers to Fillmore and Chafe's definition of the agent as a typically but not necessarily animate instigator of an action; "someone or something which is perceived to have its own motivating force and to cause an action or process" (Brown, 1973, p. 193). Action involves observed movement, but can also refer to attention as initiated by an animate being and includes verbs of notice

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(watch, see) (Bloom, et al, 1975). Agent + action examples: mommy eat (child observing mother eating), I eat (as child begins eating), I see or you see.

5. **Action + object.** Object as defined by Brown (1973) is "someone or something (usually something, or inanimate) either suffering a change of state or simply receiving the force of an action . . . the name of a person or thing or pronoun like **it** or **that**" (p. 193). Edwards (1974) emphasizes object as a critical element in semantic relations; object being defined as any person, place or thing, commensurate with Piaget's definition of object in the sensori-motor stage of development. This may also refer to attention to a person, object or event, using a verb of notice, as "see", "watch", "look at". Action + object examples: push car (child initiates or observes the pushing of a car), see sock (child initiating action of seeing a sock).

6. **Action-Modifier.** This expresses a relation between action or observed movement, and a description of that movement. This relation is most typically observed as an action verb + adverb. Examples of action-modifier: run fast, read now.

7. **Agent + object.** The relation expresses a direct interaction between someone or something with another person or thing. Typically, this refers to a person initiating movement on a thing. Examples of agent + object: boy ball (as child sees a boy kicking a ball), mommy sandwich (as child sees mother eating a sandwich).

8. **Agent + stative.** This relation refers to a transitory state of affairs experienced by persons or other animate beings: either (1) an internal state — as "like", "want", "need", or (2) a temporary state of ownership or possession — "have" (Bloom, et al, 1975). Examples of agent + stative: toy want, boy have, I like.

9. **Stative + Object.** This relation refers to a transitory state of affairs affecting or referring to an object (person or event). As in the previous category the stative word can refer to an internal state or a temporary state of ownership or possession. Examples of stative + object: want toy, want go home, like mommy.

10. **Locatives — static locative (x + locative).** As described by Edwards (1974), locatives are primarily either static or dynamic. The static locative most closely resembles Brown's entity + locative; that is the spatial position or orientation of an object when static. The entity can be any thing or person and the semantic relationship refers to its location. Static locative examples: ball table (ball resting on a table), baby bed (baby is on the bed), where ball ("where" standing for the locative word). Generally the surface verb "to be", which is omitted in early utterances, carries the static aspect.

11. **Locatives — dynamic locative (action + locative).** These locatives are similar to action + locative in that they mark the spatial orientation of an action. Edwards defines dynamic locative further by suggesting that they refer to movement of an object or person toward (goal) or away from (source) a particular position. Source and goal are critical elements of this semantic relation. Source examples: ball table (as the ball falls off of the table), mommy house (as mommy is leaving the house). Goal examples: daddy house (as daddy is coming in the house), book table (as child is putting a book on the table), where go (child commenting on car moving to unknown location).

12. **Possessives.** According to Edwards (1974) there are three types of possession. Persons and their body parts involve inalienable possession. Transitory possession refers to persons receiving objects in hand to hand exchange. This sounds similar to a locative, but in this case a beneficiary is animately involved as receiver of an object. And finally, permanent possession which refers to privileged access of persons to objects. This involves two notions: (a) the concept of association of persons with the things they habitually wear and use (daddy coat), and (b) constraints that are imposed on a child's actions on objects to which parents or others have privileged access. This involves idiosyncratic notions. For example, "daddy book" may mean "daddy says that book is not to be touched". The possessives usually take the form of a possessor + possession.

13. **Entity + Attribute.** Brown (1973) defines this construction as specifying "some attribute of an entity which could not be known from the class characteristics alone" (p. 197). This seems to be an early way of describing an object. Examples of entity + attribute: mommy doll (meaning the doll is a mommy, not that it is mommy's doll), big dog, yellow bird.