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Comparison of Amounts of Verbal Response Elicited by a Speech Pathologist in the Clinic and a Mother in the Home

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Language assessment of children is an essential task of the speech clinician and many studies have been concerned with the validity of the data gathered. Few studies, however, have investigated examiner variability as a possible source of deviation in language assessment. This study was designed to evaluate and compare the amount of verbal output which children with normal language use when examined by two different examiners when the examiners are in their most comfortable setting.

Six children, four years of age, were examined by a speech pathologist in the clinic and the mother in the home and the 12 fifteen-minute taped episodes of dialogue were transcribed and subjected to mean length of response analysis by the Wilcoxon

Matched-Pair Signed-Rank test of significance.

Results indicate there is no statistical significance at the .05 level of confidence to the differences between results obtained by the examiners nor to the differences in results obtained between the first and second examination. The average MLR achieved by the subjects in this study does not reach those of previously established norms. A trend was evidenced for the speech pathologist to elicit greater amounts of verbal output than the mothers and both the statistical non-significance of differences and the failure to reach previous norms may be an artifact due to the small sample size, method of recording, and examiner variability.

COMPARISON OF AMOUNTS OF VERBAL RESPONSE ELICITED BY A SPEECH PATHOLOGIST IN THE CLINIC AND A MOTHER IN THE HOME

by

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CHAPTER I

REVIEW OF LITERATURE AND STATEMENT OF PROBLEM

Introduction

Interest in the development of language has led to many investigations concerned with normal language acquisition and development and of methods to quantitatively and qualitatively measure this vital communicative function (McCarthy, 1930; Davis, 1937; Templin, 1957; Winitz, 1959; Cowan, et al, 1967). A child's control of his environment and overall level of development may be indicated by the sophistication of his language usage. McCarthy (1954) feels that insight into psychological and intellectual processes is gained through analysis of language. Certain psychological reactions may affect the type or quantity of language output. Anxiety in a strange situation may reduce or completely curtail the amount of a child's language or, in reverse effect, increase the deviant types or number of responses. The effects of a new or strange situation may lead to the production of a speech and language sample which is not an accurate picture of the child's ability (McCarthy, 1930; Davis, 1937; Van Riper, 1963). The speech clinician usually asks the parent or others in the child's environment to describe the speech and language behavior outside of

the clinical setting, to indicate how well the child performs this function in his normal environment, to estimate the amount of language and vocabulary used, and to report other parameters of the language not observed in the clinic. The implication has been that the child's language will differ considerably when he is confronted with a new setting and a strange examiner and this will lead to a faulty assessment of language ability (Casteel, 1969). If this is true, the entire treatment program, including diagnosis and a program for correction, will be based upon misleading information and would have little chance of leading to successful remediation of the problem.

Review of the Literature

Investigation and study of language development has progressed from observation of isolated cases concerned primarily with acquisition of vocabulary to controlled, scientific studies designed to permit standardized evaluation of various language characteristics. In the 18th and 19th centuries, reports of language development were generally personal observations of individual cases rather than reports of language behavior of groups of children. Beginning in 1930, studies have employed more scientific control in the observation of groups of children representative of the population at large. Many investigators have examined normal language development since this early beginning (McCarthy, 1930; Dewey, 1935; Davis, 1937; Templin, 1957;

Winitz, 1959; Cowan, et al., 1967). Many have been concerned with replication of earlier reports in an effort to standardize the techniques and methods employed and to bring the normative data up to date.

In investigations of normal language, various dimensions of language development have been considered and different language measures and methods of examination have been employed. Investigators have been concerned with such diverse parameters of language as age of onset of first words (McCarthy, 1954), order and rate of appearance of speech sounds (Schneiderman, 1955), language patterns and psycholinguistic abilities (Gerber and Hertel, 1969), content and form of speech (Hahn, 1948), and amount and rate of speech (Smith, 1926; McCarthy, 1930; Day, 1932; Winitz, 1959; Srhiner and Sherman, 1967). Measures have included length of response (McCarthy, 1930; Templin, 1957; Winitz, 1959), rating of egocentricity (McCarthy, 1930; Davis, 1937), language structure and sentence complexity (McCarthy, 1930; Day, 1932; Winitz, 1959), vocabulary (Dunn, 1959; Smith, 1926), and type-token ratio (Johnson, et al., 1963).

This variety of methods and measures which have been utilized does not lead to comparability between studies. In order that normative data may be meaningful, a standard technique and measure to elicit and evaluate the language sample must be applied.

So that the most useful language measure which could be applied with some degree of standardization and control could be selected,

one of the dimensions of language most frequently studied is mean length of response (MLR), both alone and in conjunction with other dimensions and measures. Early investigators utilizing this method of analysis included Nice (1925) who suggested "average sentence length may well prove to be the most important single criterion for judging a child's progress in the attainment of adult language." McCarthy (1930) studied length of response, complexity of sentence structure, function of the response, and proportions of various parts of speech and concluded that MLR was the "simplest and most objective measure of the degree to which children combine words at various ages." McCarthy (1954) further stated that no measure "seems to have superseded the mean length of sentence for a reliable, easily determined, objective, quantitative, and easily understood measure of linguistic maturity."

In a study designed to evaluate relationships between language measures and psychological rating scale values, Shriner and Sherman (1967) found a higher correlation of MLR with scale values than any other predictor variable. They concluded "... if a single measure is to be used for assessment of language development, this one (MLR) thus would appear to be the most useful among those studied." Soon after, Shriner (1967) in a related study reported that "until there is further improvement of the length-complexity measure... mean length of response is a satisfactory predictor of language for children who

are approximately five years of age and younger."

Although MLR has been extensively studied and frequently used in the assessment of language development, several shortcomings have been recognized. These shortcomings must be acknowledged and dealt with in order to increase the reliability of the resultant data. The use of longhand recording is cited by Siegel (1962) as "increasing the possibility of obtaining values that are inaccurate or even biased" and suggests transcripts prepared from tape recordings be utilized. The size of the language sample has been considered by several investigators as a possible source of inaccuracy (Nice, 1925; McCarthy, 1930; Darley and Moll, 1960; Minifie, et al., 1963; Shriner, 1969). Darley and Moll (1960) concluded that a sample of 50 responses would be adequate for most purposes although a sizable increase in the number of responses would increase reliability. Shriner (1969) states that "depending on the precision needed by an examiner, it appears as if 50 responses are sufficient for obtaining a reliable MLR measure for most purposes" although he adds that if the sample is increased beyond 50 responses the reliability coefficients increase concommitantly.

Another factor affecting reliability of the measure is that correct estimations of MLR have been difficult to achieve. In order to assess language development most accurately, reports from parents, teachers, and others in the child's environment have been solicited.

Descriptions of acquisition of first words and phrases are sought as well as estimations of the MLR of the child in his home and/or school. Webster and Shelton (1964) report that dependency upon the accuracy of these estimations is unreliable as the correlation between teacher and parent estimates of average words in a child's response and measured MLR was low.

The test situation may lead to variations in performance and MLR has generally been assumed to decrease in new and possibly threatening situations. Various investigators and authors have stated that a comfortable, non-threatening environment for the child would be most conducive to obtaining a representative language sample (McCarthy, 1930; Davis, 1937; Templin, 1957; Winitz, 1959; Van Riper, 1963; Black, 1964; Cowan, et al., 1967). Casteel (1969) studied the effects on MLR of testing in a comfortable (home) setting as contrasted with a clinical setting and concluded the results "indicated no main effect difference between settings." He did find, however, that "when considering the interaction of examiner and setting there are significant differences in performance between familiar setting and clinical setting."

Examiner variability may be a factor in obtaining a reliable MLR rating. Few investigations have studied the effect of examiner variability on MLR of the child. McGuigan (1963) feels that examiner differences in obtaining MLR could be the result of variation in

techniques of administering the independent variable and recording the dependent variable or variation in personality characteristics. Cowan, et al. (1967) found a significant difference between MLR obtained by two examiners but states the effects of the examiner as a social stimulus are clouded by differences in task presentation, recording method, and scoring habits. In questioning the consequences resulting from different examiners (speech pathologist and mother) in different settings (clinic and home), Casteel (1969) reports the examination of data to indicate

> The high MLR results were obtained in a preferred setting for both examiners. The examination of these data seems to point most strongly to the need for the adult to be comfortable in the setting. It would seem reasonable to conclude that, other things being equal, the best results on language assessment would be gained by the speech pathologist in the clinic and by the mother in the home.

The speech clinician depends upon small language samples elicited in a clinical setting in order to make evaluations of a child's stage of language development. It would appear that significant differences in assessment could be the result of several variables, including that of examiner variability. In order to make valid judgment of level of language ability, it would seem imperative to ascertain that the examples of language obtained in the clinic are most representative of the child's ability.

Purpose of the Study

The study is designed to evaluate and compare the amount of verbal behavior which children with normal language use when examined by two different examiners when the examiners are assumed to be in their most comfortable setting. The goal is to compare the language output of normal children observed in a clinical setting with a speech pathologist with the language output of the same children observed in their homes with the mother.

The essential question is: Does language output remain the same, regardless of examiner?

CHAPTER II

METHODS AND PROCEDURES

Procedures

In gathering language samples from which to compute MLR, the following procedures were utilized. (1) Three children were tested first by the mother in the home and second by the speech pathologist in the clinic. (2) Three children were tested first by the speech pathologist in the clinic and second by the mother in the home. (3) A minimum of one week elapsed between the first and second examination. (4) Each child served as his own control. (5) The mothers and the speech pathologist were given typed instructions (Appendix I) describing their roles in gathering the language sample and were given the opportunity to ask questions regarding their roles, the situation, and the materials provided for language stimulation. (6) All language samples were recorded using a Uher Universal Model 5000 tape recorder and a lavaliere microphone. (7) The tape recordings of each language session were made into a typed transcript by the investigator who had received previous training in this task (Appendix II). (8) The transcripts were analyzed for mean length of response (MLR) and this data was subjected to the Wilcoxon Matched-Pairs Signed-Ranks Test

to determine presence or absence of significant differences between the examination performed by the mothers and the speech pathologist. This test was used further to determine significance of order effect on MLR.

Subjects

Six subjects with normal speech and language, three male and three female, were chosen for this study from the Greater Portland Area, Portland, Oregon. The mean age for the group was four years and they ranged in age from three years ten months to four years two months. Children with reported hearing losses, physical handicaps, or the product of multiple birth were excluded.

Socioeconomic computation for the subject families, as determined by Working Paper Number Fifteen, U. S. Bureau of the Census (1963), places all families in the upper one-third of a ten decile range with all but two families scoring in the upper two deciles. Socioeconomic status was not considered a critical factor in choosing subjects as comparisons in this study were intra-subject, i. e., each child was his own control and his performance with one examiner was compared with his performance with the second examiner.

A screening procedure was performed for all children. This consisted of application of the CCD Language Manual, University of Oregon Medical School, the Peabody Picture Vocabulary Test, and age

level items from the Standard Binet Intelligence Scale. All subjects scored to age level on the items from the CCD Manual and passed all items at the four year level of the Stanford Binet. All children exceeded the predetermined intelligence quotient exclusion point of 80 on the Peabody Picture Vocabulary Test and scores ranged from 100 to 132 with a mean of 113 and the median located between 109 and 111.

Examiners

One speech pathologist at the doctorate level and six mothers were the examiners. No instructions or suggestions on how to elicit verbal response from the child were offered as it was desirable that their normal method be used. The examiners were presented with typed instructions (Appendix I) defining their role and the limitations of the setting. They were given the opportunity to ask questions for further clarification and to examine the books and objects available for use if needed to stimulate verbal output of the child.

Test Sessions

Twelve fifteen-minute language samples were obtained by audio-tape recording examinations of the six children conducted by the mothers and the pathologist. Tape recording was first used by Winitz (1959) and further researched by Darley and Moll (1960), Siegel (1962),

Minifie, et al. (1963), and Webster and Shelton (1964). Siegel (1962) indicates a preference for tape recorded samples since he feels that inaccurate or biased MLR values may be obtained by longhand recording. Minifie, et al. (1963) have reported their subjective judgment that differences which favor tape recording over handwritten notes are real and important.

Setting

In order to determine whether or not a significant difference in a child's MLR occurs, certain methods were established. One examiner of each child was a speech pathologist who conducted the examination in a speech clinic. The second examiner was the child's mother who conducted the examination in the home. According to Casteel (1969), this would place each examiner in her most comfortable setting which should lead to the examiner's optimal functioning in eliciting verbal response from the child.

Transcripts

After the sessions were tape recorded, the investigator made the recordings into a typed transcript (See Appendix IV for sample transcript) following a system patterned by McCarthy (1930), Davis (1937), Templin (1957), Winitz (1959), Siegel (1962), and Casteel (1969). Siegel (1962) suggests that specific training be provided for

typing the transcripts to increase reliability of these transcripts. Written instructions were prepared (Appendix II) as guidelines. The investigator had been trained previously on 24 fifteen-minute tape recorded language samples and was deemed to be reliable in the methods of transcribing.

MLR Analysis

Each typed transcript of the 12 fifteen-minute dialogues were tabulated for mean length of response (MLR) of the child following a system patterned on McCarthy (1930), Davis (1937), Templin (1957), Winitz (1959), Siegel (1962), and Casteel (1969) (See Appendix II and III for description). The total number of words used in each fifteen-minute session were divided by the total number of response units and this resulted in the child's MLR for that examination.

Webster and Shelton (1964) and Casteel (1969) found that a fifteen-minute session of dialogue resulted in obtaining a representative sample of sufficient size upon which to base MLR analysis. It was determined that fifteen-minute sessions of dialogue would yield a sufficient sample for computation in this study and obviate the necessity for examiners to attempt a count of responses. It was anticipated that this would provide samples of comparable size and enable the examiners to interact with the subjects in a free and natural manner.

Reliability

Two judges and the investigator were used in the MLR interjudge reliability examination. The two judges were skilled in listening ability, one having previously been involved in a study of this nature and the other a member of a Language Development Project at the University of Oregon Medical School.

Typed instructions (Appendix III) were prepared and training samples of speech episodes were provided on tape for the judges. The three taped episodes demonstrated types of judgements which must be made in MLR analysis.

Following the training session, 24 speech samples were chosen at random from the 12 available tapes and presented independently to the judges for MLR analysis. Samples were then randomly chosen from the 24 and presented for a measure of intra-judge reliability. All judges demonstrated 100 percent agreement on the test-retest samples. Inter-judge reliability was 92 percent for all judges and the investigator's ability to accurately perform MLR analysis was deemed adequate.

Data Analysis

In analysis of the data, inter- and intra-judge reliability in rating MLR was determined in percentages.

As the population for this study was not a random sample, the Wilcoxon Matched-Pairs Signed-Ranks Test was chosen for statistical treatment of the data. This test correlates highly with the parametric t-test and is considered the nonparametric analogue to the t.

Order effect, i.e., the effect of a second examination on resultant data was also handled by the Wilcoxon treatment. Comparisons of the MLR of the study group with that of previously established norms were made by use of a Median Test.

CHAPTER III

RESULTS AND DISCUSSION

Results

Mean length of response (MLR) analysis was performed upon the transcripts produced from the 12 fifteen-minute examinations conducted by the speech pathologist and the mothers (Table I). Statistical analysis was by means of the Wilcoxon Matched-Pairs Signed-Rank test of significance.

As indicated in Figure 1, in the examinations performed by the speech pathologist in the clinic, individual MLR scores ranged from 2.62 to 5.04 for the six subjects with the average being 3.73. The examinations performed by the mothers in the home resulted in individual MLR scores ranging from 2.65 to 3.51 with the average being 2.98. When examined statistically by the Wilcoxon Matched-Pairs Signed-Rank test, there was no significant difference between examiners at the .05 level of confidence.

Combining the 12 examinations without respect to examiner revealed a MLR average of 3.35 with a range of individual scores from 2.62 to 5.04.

TABLE I

MLR OBTAINED BY EACH EXAMINER AND DIFFERENCES INDIVIDUALLY AND COLLECTIVELY

	Examiner		
Subject	Speech Pathologist	Mother	di
1	5.04	3.51	1.53
2	3.99	2.73	1.26
3	3.85	3.41	.44
4	2.69	2.65	.04
5	2.62	2.71	- .09
6	4.22	2.87	1.35
Total	22.41	17.88	4.53
$\bar{x}$	3.73	2.98	.755

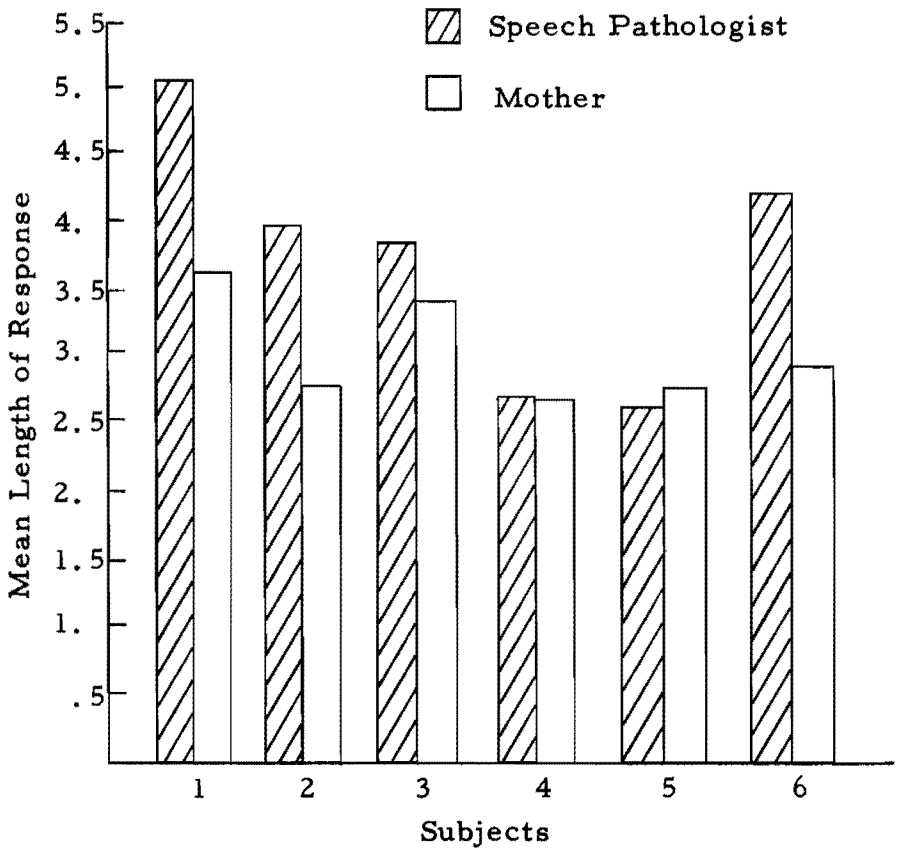

Figure 1. A comparison of the MLR of each subject when examined by the mother and the speech pathologist.

When the scores from both examinations are considered in regard to sex, the MLR average was 3.52 for boys and 3.19 for girls.

Neither the average MLR achieved in the speech pathologist examinations of 3.73 nor that achieved in the mothers' examinations of 2.98 reached the norms of previous researchers for a normal population. The McCarthy (1930) norms indicate a MLR for four year old children of 4.4 and the Templin (1957) norms are 5.4. The MLR results from the speech pathologist's examinations are .67 below the McCarthy norms and 1.67 below the norms established by Templin. The mothers' examinations resulted in MLR averages 1.42 below McCarthy norms and 2.42 below Templin norms.

MLR analysis according to order of examination are displayed in Figure 2. In this setting, without respect to examiner, the MLR average was 3.23 for the first examination and 3.48 for the second examination. Using the Wilcoxon Matched-Pairs Signed-Rank test there was no significant difference between examinations at the .05 level of confidence.

Discussion

This study was designed as one facet of an ongoing program of research to answer the question "To what extent will a child's MLR be expected to differ when speech is elicited by a speech pathologist in the clinic and the mother in the home?"

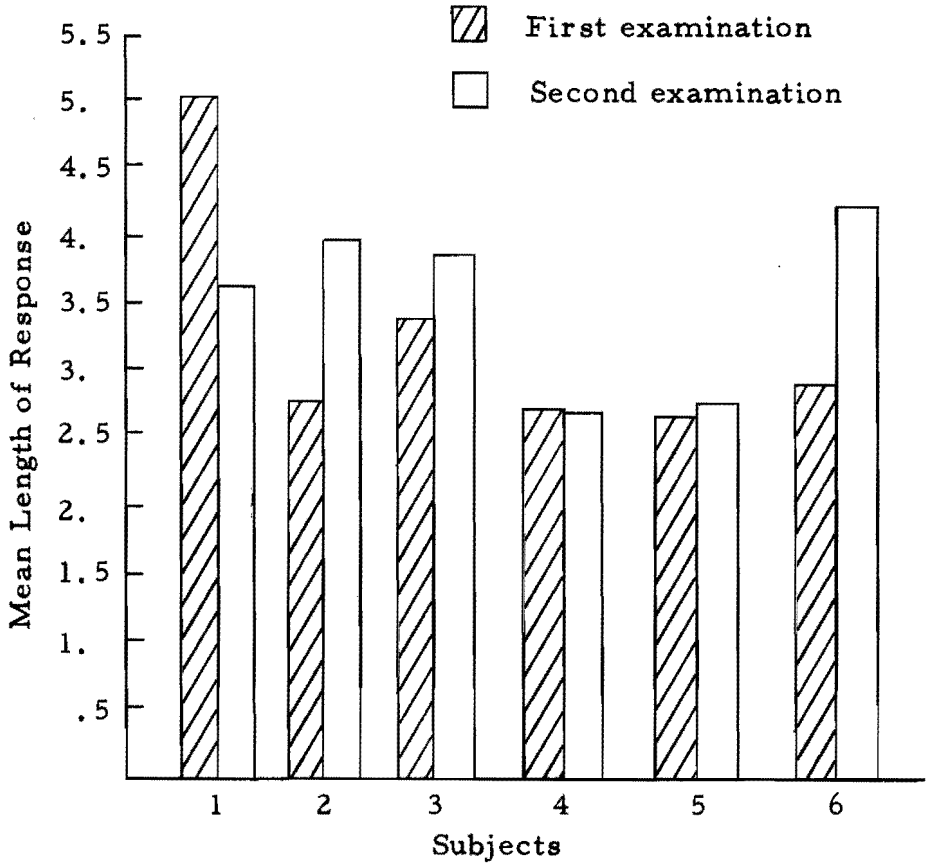

Figure 2. A comparison of the MLR of each subject between the first and second examination without regard to examiner.

In view of the results cited in the foregoing section, statistical analysis would indicate that the amount of verbal output, as measured by MLR, does not change significantly for the sample tested whether a child is examined by the mother or by the speech pathologist. This suggests that for this small sample the child's MLR is statistically stable during a given period of time and difference in examiners is not statistically significant when attempts are made to establish language levels by this measure.

Non-significance of the differences may be the result of several factors. The type of examiner used in this study may have influenced the lack of change in verbal output as the families were in the upper one-third of socioeconomic standing and all but one mother had attained a high level of education. It is possible that different types of examiners might yield larger changes in the child's MLR. A further factor may be the small sample included in this study for when Figure 1 is examined a notable difference can be observed. In only one instance, for Subject #5, did the mother's examination result in a higher MLR than that of the speech pathologist and this difference was only .09 in favor of the mother. In contrast, the differences for MLR in the remaining subjects were 1.53, 1.35, 1.26, .44, and .04 in favor of the speech pathologist. This would indicate that clinically the speech pathologist was capable of eliciting a language sample which is more representative of the child's potential than was observed

during examination by the mother in the home.

The trends that developed from the comparisons between examiners are illustrated in Figure 3. In all but one case, the speech pathologist elicited a higher MLR than the mother and even though the differences are statistically nonsignificant the direction of this graph would suggest that this small sample of children produced comparable or better MLR in the clinic than they produced in the home. As in the Casteel (1969) study, this indicates a probability that the speech pathologist obtained a sample of the child's speech that is representative of the child's optimum speech output.

In the one instance in which the mother exceeded the speech pathologist in obtaining a greater MLR from the child the speech pathologist obtained fewer total responses than did the mother (Table II). The responses obtained were 156 for the mother's examination and 64 for the speech pathologist's examination which just meets the McCarthy (1930), Minifie, et al. (1963), and Shriner (1969) criteria for number of responses needed for most clinical purposes. Nice (1925) has stated that for reliability purposes, the number of responses must be at least 100 for any comparative or detailed study. In a study by Minifie, et al. (1963) it was concluded that none of the language measures they employed, including MLR, appeared to have high temporal reliability when based on 50-response samples. They state further that "Any single mean obtained from a 50-response language sample...

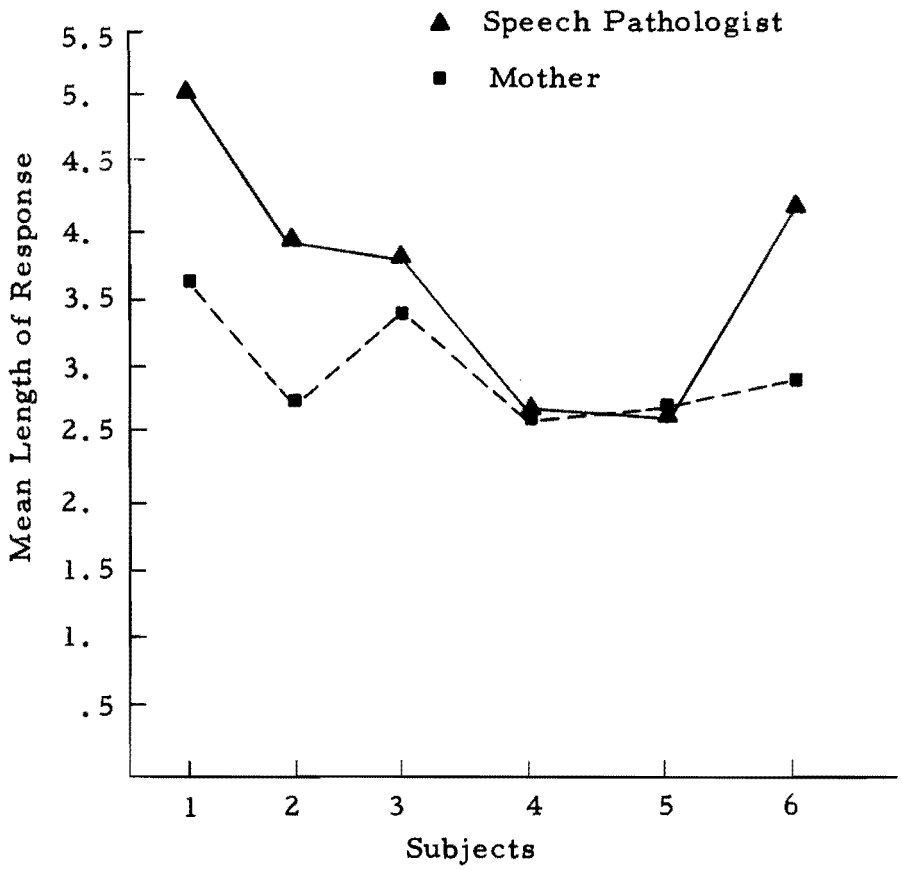

Figure 3. Differences between examiners demonstrating a trend favoring the speech pathologist over the mother in eliciting verbal output of the child.

TABLE II

NUMBER OF CHILD'S RESPONSES COMPARED WITH MLR FOR EACH EXAMINER

Subject	Examiner			
	Speech Pathologist		Mother	
	Responses	MLR	Responses	MLR
1	149	5.04	179	3.51
2	140	3.99	177	2.73
3	194	3.85	150	3.40
4	141	2.69	169	2.65
5	64	2.62	156	2.71
6	147	4.22	188	2.87

is only a gross estimate of the child's true length of response." McCarthy (1930) explained that the choice of 50 responses for language sample size was due to time factors involved and she felt this sample size would be "fairly representative" of the child's linguistic development. For reliability purposes, then, according to past research the number of responses obtained by the speech pathologist from Subject #5 were not sufficient.

In a study conducted by Siegel and Harkins (1963), the linguistic level of the child exerted some control over the examiner's verbal behavior in that the examiner displayed significantly greater MLR, manding, and redundancy with low verbal level children than with high verbal level children and this deprived the child of the necessity or opportunity for verbal enrichment. This suggests that when the examiner modifies his behavior to adapt to that of the child with a low verbal output it increases the possibility that the child will maintain the decreased verbalization level. In their instructions to the examiners utilized in the above study, Siegel and Harkins stressed the importance of avoiding application of pressure to talk and especially to avoid direct questioning as a means of getting the child to respond and state that "In the long run this will be the least effective technique" with which to elicit speech.

Casteel (1969) found that when talking to a reticent child his examiners asked binary questions which could be answered "yes" or "no" or by some other single word naming response. In the present

study, Subject #5 is a child with low verbal output whose comprehensive vocabulary as measured by the Peabody Picture Vocabulary Test far exceeds his expressive vocabulary. The speech pathologist, in examination of this child, as in the Casteel study not only increased her verbal output over that of the other examinations but also substantially increased her manding or binary question behavior.

Upon examination of MLR as compared between the first and second examinations, it will be seen in Figure 2 that the second examination resulted in higher MLR for four subjects. The two examinations which resulted in a higher MLR on the first examination were those which were conducted by the speech pathologist and the only examination conducted by a mother which resulted in a higher MLR was a second examination. The mean difference between first and second examinations was .25 in favor of the second examination while there was a difference of .75 in favor of the speech pathologist when considering examiner difference, revealing more consistency between first and second examination than between speech pathologist and mother's examinations.

When comparing the average MLR obtained in this study with norms established in previous research, some differences are noted. For this small sample, the .67 difference between the speech pathologist's MLR results and the McCarthy (1930) norms would not appear to be significant. The 1.67 difference between the speech pathologist's

results and the Templin (1957) norms is great enough to warrant closer investigation. The difference of 1.42 from the McCarthy norms and 2.42 from the Templin norms for the MLR averages of the mothers' examinations are of much greater magnitude but could be a result of a difference in examiners. In both of the previous studies, the examiners were trained and experienced in methods of eliciting speech while the mothers in this study were untrained in these techniques.

In reviewing factors that have been suggested as possible causes of decreased MLR, none are applicable to this sample. Various authors (Day, 1932; Davis, 1937; and Minifie, et al., 1963) have reported that twins will display a reduced MLR. Smith (1939) indicates a reduced MLR for those children from bilingual homes although McCarthy (1930) does not feel that a home in which a foreign language is spoken presents a serious handicap to linguistic development. Differences in language development between socioeconomic groups have been reported by Smith (1926), McCarthy (1930), Davis (1937), Irwin (1948), Templin (1957), Cowan, et al. (1967), and Gerber and Hertel (1969) with lower socioeconomic groups and culturally disadvantaged children displaying reduced MLR. Below average intelligence levels are cited as having a possible correlation with lower MLR by McCarthy (1930) and Winitz (1959).

In viewing this study in light of the above information, no subjects were included who were products of multiple birth or who resided

in a bilingual home. Only one child, Subject #6, had no siblings. All families in this study were in the upper one-third of socioeconomic standing and all but two families were in the top two deciles as measured by the U. S. Bureau of the Census Working Paper Number 15 (1963). Intelligence measures employed for this sample indicated that all subjects were of average or above average intelligence.

In view of these controls, no valid conclusions can be drawn regarding the MLR difference in this study from national norms and it is suggested that a reappraisal of previously presumed reasons for tester differences be reviewed.

The literature in this area provides an excess of speculation which singularly or in concert could contribute to the normative differences. Cowan, et al. (1967) has reported a concern regarding the differences in MLR obtained between studies and suggests that stimulus and examiner variable could account for these differences. The findings in his study indicate that language expression of the child was affected by the examiner in different amounts for the subjects in different age and sex subgroups. Two male examiners were used in the Cowan study and Examiner A elicited longer responses from five and eleven year old children while Examiner B elicited longer responses from seven and nine year old children. This same examiner variability was evident in sex groupings with Examiner A obtaining higher MLR with males and Examiner B with females. Neither of these

factors would appear to be applicable to the examination of Subject #5 of this study.

McGuigan (1963) in a review of various studies suggests that there may be an interaction between characteristics of an examiner and the independent variable of the experiment, i.e., variations in examiners becomes in itself a stimulus object in the test situation and affects the outcome of the experiment. One study cited was that of a single experiment replicated by nine different examiners with varying degrees of difference and contradiction in the obtained results. Another case involved interaction of subject characteristics with examiner characteristics. Two possible reasons for examiner variability were suggested: variance in techniques of administering the independent variable and differences in personality characteristics of examiners. McGuigan concluded that interactions between experimenters and treatments do occur and should be explored further with better controls established between studies. In any attempt to establish experimenter controls, however, it is pertinent to consider the findings of Casteel (1969) regarding the experimenter variables. His study indicates that the best test results are obtained when the examiner is in his most comfortable setting. This factor has not been taken into account in prior studies and it is not likely this would be feasible in all types of studies.

Wilson (1969) feels that as the method of eliciting a speech

sample is not standard in regard to examiner and subject instructions or to a standardized set of stimulus materials, the use of the McCarthy and Templin norms is questionable.

Minifie, et al. (1963) emphasize that differences in recording technique and environmental influences may account for discrepancies when comparing normative data between studies. They urge consideration of this factor when comparing data since comparisons would be of little value if the norms are obsolete.

The conflict in following the McGuigan and Minifie admonitions in this study is that not only did the type of examiner differ but the examiner was placed in his most comfortable setting which resulted in an environment that was different from the setting utilized in the McCarthy and Templin studies. Further, the tape recording techniques used in the present study differs from the handwritten recording method used by McCarthy and Templin.

Comparisons with normative data are useful but were not a major consideration in performing this study. Each subject acted as his own control and the primary comparisons were intra-subject, i.e., comparing one child's performance with two different examiners. As noted above, examiners do vary in differing degrees of skill, comfort in the test situation, proficiency, personal characteristics, and relationship with various subjects depending upon the subject's characteristics, age, and sex. These factors, plus others which may not be

readily apparent, probably contributed to the obvious differences between results of this study and previously established norms.

It can be concluded that there was no significant difference in the verbal output elicited by the different examiners although the non-significance may be due to the type of examiner and the small sample size as a trend toward better performance for the speech pathologist was noted. There was, in addition, no significant difference in the amount of verbal output between the first and second examinations. When compared to previously established norms, the MLR averages for this study are appreciably below previous norms and might be a result of several factors for which no controls were established in this study.

CHAPTER IV

SUMMARY AND IMPLICATIONS

Summary

Language assessment of children is an essential task of the speech clinician and many studies have been concerned with the validity of the data gathered. Few studies, however, have investigated examiner variability as a possible source of deviation in language assessment.

This study was designed to evaluate and compare the amount of verbal output which children with normal language use when examined by two different examiners when the examiners are in their most comfortable setting.

Six children, four years of age, were examined by a speech pathologist in the clinic and the mother in the home and the 12 fifteen-minute taped episodes of dialogue were transcribed and subjected to mean length of response analysis by the Wilcoxon Matched-Pair Signed-Rank test of significance.

Results indicate there is no statistical significance at the .05 level of confidence to the differences between results obtained by the examiners nor to the differences in results obtained between the first

and second examination. The average MLR achieved by the subjects in this study does not reach those of previously established norms. A trend was evidenced for the speech pathologist to elicit greater amounts of verbal output than the mothers and both the statistical non-significance of differences and the failure to reach previous norms may be an artifact due to the small sample size, method of recording, and examiner variability.

Implications for Clinic and Future Research

Clinic

The findings in this study substantiate the results of the Casteel (1969) study and indicate that the speech clinician obtains a sample of speech which is comparable to that the child typically uses in the home. There is an indication or trend which suggests that the speech clinician is capable of eliciting a language sample which is more representative of the child's potential than could be observed in the home environment.

It is further indicated that results obtained in one examination do not change significantly in a second examination. This should alleviate the concern that the speech clinician cannot rely on the results of one examination to make an adequate or valid diagnosis.

The method used in this study, involving tape recording a child's dialogue and then transcribing it for analysis, would be too time

consuming for routine clinical use. It could be helpful in substantiating dubious findings, however, or useful in those cases where the parent reports a difference in language usage in the home than in the clinic.

Research

It is suggested for future studies of this nature that a larger sample of at least 12 subjects could aid in clarifying the trend which indicated that the speech pathologist obtains a greater speech output from the child than the mother is capable of obtaining.

The sample used in this study severely restricted any interpretations of results which could be generalized and greater care to insure the selection of a random sample would allow more freedom for extrapolation of findings to the normal population distribution.

In further studies concerned with MLR, matching other variables such as recording method, socioeconomic status, IQ, and age to those in previous studies could allow reliable comparison with established norms.

Examiner variability has emerged as being of paramount importance in the reliability of data obtained. An especially pertinent study relative to the importance of examiner comfort in the test situation would be to compare the amount of verbal output elicited by a speech pathologist and a mother with the examinations conducted in a clinic.

In addition, the comparison of two or more clinicians with mothers from different socioeconomic and educational levels in amounts of verbal output obtained could result in findings which would be relevant especially to the effectiveness of speech clinicians and speech and language clinics in general.

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APPENDICES

APPENDIX I

Examiner Instructions

We are interested in obtaining a free sample of speech in a non-test situation. It is important that you feel free to get your child to talk by any means that you choose to use for we want to obtain the greatest amount of talking from your child. There will be some things that you will have available to use, such as picture books and some toys which are generally of interest to young children. You may or may not want to use these books and toys. The important thing is to get as much "talk" from the child as possible.

We are aware that even children who are not thought to be shy often need encouragement before they talk freely to an adult. Anything you can do to increase the child's taling is to be encouraged. Think of your job as one of getting the child to give the best sample of his ability to communicate his ideas and thoughts. Hopefully, with the direct attention that you are paying to the child, he will talk to the best of his ability. This may mean that an extremely shy child won't talk as much, but he will talk as well as he can.

Finally, the only things you must do are to keep the child in the room for 15 minutes, and keep the child talking as much as possible during that time.

Do you have any questions about what you are to do in the task?

APPENDIX II

Transcript Typist Instruction

In a speech situation between an adult and a child, tape recordings have been made. These tape recordings are the only information we have regarding the conversation taking place between these two people; so, for this reason, it is critical that the typing be accurate. There are certain general and specific instructions that you need to adhere to at all times in transcribing these tape recordings.

A. General Instructions

1. Use the letter A to designate utterances by the adult and use the letter C to designate a response by the child.
2. Do not use standard punctuation, other than apostrophes, which are to be used to indicate the possessive case or contractions.
3. Any response or part of response, i.e., episode, which you cannot comprehend after diligent effort to determine what is being said, omit that entire episode from the transcript, even one word in an otherwise intelligible response. Since the language of children is not predictable by adult standards, one should not over rely on context clues for unclear or missing words. Many factors may contribute to the utterance being unintelligible: too low an intensity of utterance, environmental noise, speech defect, two people talking at once or the recorder is malfunctioning. Do note that an unintelligible episode has occurred.
4. The speech response need not be a complete thought; but, if all words are intelligible, include the response as one speech episode.
5. At times, you will find both the adult and child talking at the same time. First type the complete response of the person being interrupted and, then, type the other speaker's utterance.
6. Certain utterances are not meaningful words, but are vocal pauses, such as <u>er</u>, <u>ah</u>, <u>andah</u>, <u>um</u>, etc. Do not type vocal pauses.

7. Some words acoustically similar to meaningless interjections are considered as real words and should be typed, such as huh-uh, uh-huh, hm, or animal sounds which are used in lieu of the name of the animal in a thought. An example would be, "The grr is after the boy." Another example of a noise being an integral part of the response would be, "The cat goes meow."
8. Word and phrasal repetitions are excluded if they represent natural non-fluencies as opposed to repeating for stress or elaboration. An example would be, "He he he went home." The underlined words in this example would not be typed.

B. Determining and Designating a Vocal Response Unit
1. Usually, a vocal response unit is ended by a complete stop for breath.
2. At times, it is indicated by a falling inflection.
3. At other times, it is indicated by a rising inflection, such as in a question or exclamation.
4. At times, you may be able to recognize that one speech episode is complete when one person stops talking and the other person begins.
5. A vocal response unit may be the utterance of a single word, such as, uh-huh, if it is an affirmation, huh-uh for negation, huh for interrogation or oh for exclamation.
6. A single word response that is not recognizable as a word or a word approximation is considered not to be a vocal response unit and should not be transcribed. As an example, if the response to the phrase, "The flag is red, white, and ..." was "dom," this would not be considered a vocal response; however, if the response was "boo," it is conceivable that this is a verbal approximation of "blue."
7. When one simple sentence is followed immediately by another simple sentence with no pause for breath, the two are considered to comprise one sentence if the second statement is clearly subordinate to the first. Examples: "I have a sister she's in fourth grade" and "I see a car it's a Ford."
8. Remarks which appear to be clearly enumerative, if separated by pauses, are considered separate response units.

C. How to Mark the Transcript
1. Indicate the beginning word of any speech episode by

underlining it; and make the appropriate ending response which is a single slash (/) for a statement and a double slash (//) for a question.

2. It is important that, even if the episode is composed of only one word, it must be underlined and followed by the appropriate slash mark.
3. It is important to remember that each speaker must be designated appropriately and accurately.

D. Criteria for Counting Words

1. Contractions, whether those normally marked with an apostrophe (isn't) or assimilations (wanna) will be counted as two words.
2. All expressions of negation, of affirmation, of exclamation or of interrogation will be counted as one word. Examples would be such expressions as: uh-huh, oh oh, or uh uh.
3. Words that are compound nouns will be treated as one word, e.g., Bobbi Jo (one word), Bobbi Jo English (two words). All hyphenated words will be treated as one word.
4. As in compound nouns under three above, slang expressions which appear as single units (my gosh) will be treated as one word.
5. All onomatopoetic words (tweet-tweet) will be counted as one word.

APPENDIX III

Instructions to MLR Judges

Part One: Rules

Read attached instructions to typist.

Part Two: Suggestions

The transcript that you will be working from is far from infallible, even the recording rules are not always followed, to say nothing of judgmental differences. It is important that the basis for acceptance or rejection of a speech episode be the nervous system of the judge. It may be tempting to accept the transcript, especially if you agree with certain key words. Listen again to see if you can agree with all of the words in a long episode. Especially in long episodes, it is tempting to accept the transcript without listening to each word.

It is especially important that you attend to the first pulse of an episode. The typist frequently types "have one" for "I have one," for example. It is not unusual for the typist to supply a preposition or article that the child has left out. At times, you will find it beneficial to count pulses when you are uncertain as to whether to add a word or delete a word from the transcript.

A unit that starts as a question but ends as a statement is considered a single response unit statement. An episode that starts as a statement and ends as a question is considered a single response episode question (example: I think I'll is okay to tell that man//).

Word and phrasal repetitions are excluded if they represent natural non-fluencies as opposed to repeating for stress or elaboration. Vocal pauses are excluded.

APPENDIX IV

Sample Transcript

A: now/ everything you say goes on that/ did you know that//

C: no/

A: it's going to/ that'll be kind of fun really/ say tell me/ what do you do at sunday school//

C: I don't/ I play/

A: what kinds of things do you play//

C: I don't know/

A: sometimes it's hard to remember isn't it//

C: how come you got a chalkboard in your schoolroom//

A: well/ we write on that sometimes/ what do you think about that//

C: we got a chalkboard/

A: do you really// at school or at home//

C: at home but we don't have any chalk/

A: I bet I could take care of that for you/ do you want to take some chalk home//

C: yeah/

A: okay/ what do you think you'll do with it//

C: write on my chalkboard/

A: what will you write//

C: a picture/

A: anything special//

C: no/

A: where do you live John//

C: a long way from here/

A: oh/ did it take you a long time to get here//

C: yeah/ we goed the wrong corner/

A: uh oh/

C: but we got here/

A: good/ yes you did/ I can see that/ did your mommy get lost just a little bit//

C: no/

A: no//

C: uh uh/

A: how did she happen to take the wrong corner//

C: she thought the corner was the corner that she got to go/ what is that thing for//

A: that puts heat in here/ it's a funny looking furnace isn't it//

C: uh huh/

A: it gets hot water inside of it/ and then steam/ and then that makes us warm in the winter time/

C: oh/ what does// how come// does this take off of here//

A: no/ I think maybe that just hangs down/

C: it was on right here/ over here/

A: think it belongs someplace else//

C: maybe it belongs over there/

A: it might/ is it in your way//

C: no/

A: good/

C: except it goes up here/

A: I think that's to make that longer and shorter/ for different sized people/

C: uh huh/ I think that/ how come this is here//

A: that's where the microphone is/ that's where you talk into/

C: will this fit on this// nope/

A: uh huh/

C: this doesn't/

A: no/ that doesn't fit in here too well/

C: that's too big/

A: um hm/ you're right/ no those are little tiny holes/ I don't think that would go in there at all/ do you//

C: uh uh/ this is big/

A: right/

C: this/ look these holes are little/

A: I don't think anything goes in there/

C: your voice does/

A: oh that's right/ course it does/ your voice does/ we know that don't we//

C: uh huh/ this that this goes into here and that goes over to there then over to the cord tape recorder/

A: say you know quite a lot about tape recorders don't you//

C: my daddy used to have one/

A: oh that's probably why you know so much about it huh//

C: but my daddy doesn't have it now/

A: how come//

C: cause/ selled it/

A: oh he did//

C: selled it away/ but we're gonna get a new one/ some of these days/

A: what for//

C: so/ we can have it/

A: want to do anything special with it//

C: no/

A: they're kind of fun to play with though aren't they//

C: uh huh/

A: do you like to listen to yourself//

C: no/ but we got walk/ two walkie-talkies/

A: you do//

C: but they don't work/

A: they don't help you much when they don't work do they//

C: one of them broken that doesn't have any/ one of the batteries in it/

A: is that all you need is the batteries to make it work//

C: yep/ the batteries are burned out/

A: be kind of easy to put new ones in though wouldn't it//

C: yep/ but my daddy's gonna buy some one/ some of them/ two of them/ one of these days/

A: good/ do you and your dad talk together on the walkie-talkie//

C: my sister does/

A: I didn't know you had a sister/

C: two sisters/

A: two sisters//

C: one baby sister/

A: uh huh/

C: one big sister that's six/

A: are you the only boy//

C: yeah/

A: oh/ what's that like having two sisters//

C: I'm four/

A: you're a very big boy for four aren't you//

C: but my friend is four/

A: what's his name//

C: not a boy it's a girl/

A: oh you have a girl friend//

C: she's four too/

A: that's nice/

C: her name is Dana/

A: Dana/ that's a nice name/

C: and I got a friend named David that's six/

A: oh he's big isn't he//

C: uh huh/ like Jill/

A: is Jill your sister//

C: uh huh/ and Jody's my baby sister/

A: how old is she//

C: two/

A: oh she really is a baby sister isn't she// what kinds of things does Jody do//

C: she plays/

A: does she get into things//

C: I heared her voice/

A: did you// I'll listen/ maybe I'll hear it too/ is she here today// maybe it'll go on the tape recorder too/ she keeps mom busy I bet/ Jody does/ it's kind of nice to have a big boy like/

C: she screams a lot/

A: oh she does// why does she do that//

C: maybe cause to be noisy/ babies really be noisy/

A: they usually are aren't they//

C: uh huh/

A: do you think you were when you were a baby//

C: yeah/

A: sometimes it's fun to make noise/

C: uh huh/ I scream a lot/

A: you do// do you live out where nobody cares if you scream a lot//

C: yeah/ how come you got this table here//

A: well I think maybe they thought we might like to do something at the table/

C: what's in those cupboards//

A: well one cupboard has clothes in it/ and the other one's empty/

C: but what are those drawers for//

A: well that's where you keep t.v. equipment/ you probably have a t.v. at home don't you//

C: do you have a t.v. here//

A: um hm/

C: where is it//

A: well it's in a different room/ but it looks probably just like yours/

C: we got a color one/

A: oh well it's different then/ we don't have a colored one/

C: but we got channel changers/ but we don't have one that comes out but mine upstairs does/

A: yours upstairs// you have two t.v. sets//

C: yep/ mine is in my bedroom/

A: you lucky boy/ how do you rate so well// that's pretty neat to have your own t.v. set/

C: but my sister doesn't have one in her room cause my baby sister is in there/ sleeps in there and Jody might mess around with it/

A: oh yeah/ you have to watch little ones/ things like that/

C: uh huh/

A: so you've got a room of your own/ and a television set of your own/ you're pretty lucky/

C: got some men/ my little men to play with in the morning/

A: do you really// what do you like to watch on your television set in your room//

C: cartoons/

A: what kind of cartoons//

C: Fred Flintstone/

A: oh yeah

C: Hobo Kelley/

A: I don't know Hobo Kelley/ who's that//

C: girl clown/

A: a girl clown//

C: uh huh/

A: you don't see those very often/

C: I do

A: oh/ how often//

C: every day/ but not my daddy's day off I don't watch them/ they're not on when my daddy's day off/

A: I suppose you and dad are pretty busy on his day off aren't you//

C: uh huh/ but it's not on on my daddy's day off/

A: oh/

C: but the nanna/ the banana splits/

A: gee/ I don't know them either/ sounds like something to eat/

C: they're not/

A: they're people //

C: no/ they're animals that talk/

A: oh/

C: they have different voices like/ hi Bingo/

A: what kind of an animal is Bingo//

C: Bingo is/ I don't know the kind of his/ he is/

A: it's kind of hard to find an animal that talks isn't it//

C: Bingo/ Bingo/

A: what are some other names of the banana splits//

C: I got a doggie named Snooper/

A: do you really// a live one// that's Charlie Brown's dog's name isn't it// Snooper//

C: no/

A: do you know Charlie Brown//

C: yeah/ but Charlie Brown gots a dog named Snoopy/

A: that's right/ you're right/ I had it wrong/ it is Snoopy isn't it//

C: um hm/ and mine/ my doggies name is Snooper/

A: what's your dog like//

C: he got black fur/

A: hm/ long//

C: no/

A: how big is he//

C: oh/ just that big/

A: is it a puppy//

C: no/ he's a doggie/

A: so he's all grown/

C: uh huh/

A: he's as big as he's gonna be/

C: he's not big/

A: oh/

C: my friend/ that's four had a doggie named T-Bone/

A: that's a funny name for a dog isn't it//

C: T-Bone/

A: uh huh/

C: a bone/ and a T/ T-Bone/

A: I suppose that dog would like t-bones/ or a bone to chew on anyway/

C: if you want a little name/

A: um hm/ that's kind of short isn't it//

C: um hm/

A: how long have you had Snoopy// Snooper excuse me/ Snooper/ how long have you had Snooper//

C: lot of months/ lot of days/

A: long as you've been around// Snooper older than you are// oh/

C: I think he's twenty months/ twenty/ I think he's twenty/

A: gee whiz/ that is pretty old isn't it//

C: uh huh/ think he is/

A: do you have any other pets at your house//

C: no/ but we used to have bunnies but it's at a farm/

A: well that's a good place for bunnies/ don't you think// what did you keep the bunny in//

C: a cage/ my daddy builded it cage/

A: you've got a pretty talented daddy haven't you//

C: you know/ at Easter my dad/ Snooper's vet came over and taked the bunnies away/ and mommy wanted them to go away cause they keep going under our car/

A: oh/ and was she afraid they might get hurt//

C: when we go somewhere they will get runned over/

A: uh huh/ you wouldn't want that to happen/

C: they're real little/ mine was named Peter/

A: oh that's a wonderful name for a rabbit/

C: and my sister's Jill that's sick six is Bugs/ just like Bugs Bunny/

A: well I think that's a pretty good name too/ did Jody have one//

C: no/

A: no/

C: only me/ only Jill and me/

A: uh huh/

C: cause sis/ Jill sissy is pretty little old for/ pretty little for one/

A: um hm/ maybe she wouldn't be above to take care of it ____/

C: maybe next Easter she will get one/

A: you think you might get another one//

C: no/ cause I got my own/

A: you already had yours didn't you// did you take care of it//

C: yeah/

A: what did you feed it//

C: lettuce/

A: oh/

C: bunny food/

A: what is bunny food// I don't know about bunnies/

C: bunny food is little kind of little/ I think that little/

A: oh/ and you buy it at the store//

C: yeah/ but not now/ no cause we don't have our bunnies/

A: so you wouldn't need any bunny food now would you//

C: uh uh/

A: do they eat quite a lot// how often//

C: have water/

A: um hm/ how often did you have to feed them//

C: I think/ you know/