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Cross-Validation of the Length-Complexity Index Screening Form

Shari A. Galloway
Eastern Illinois University

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CROSS-VALIDATION OF THE LENGTH-COMPLEXITY

INDEX SCREENING FORM

(TITLE)

BY

SHARI A. GALLOWAY

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Science

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1972

YEAR

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

There has been an intensive educational focus on language development during the last ten years. One of the major objectives of early childhood education is the development and expansion of oral language. When a child enters school, one of the more important developmental skills for adjustment and learning is his comprehension and use of spoken language. For most children, kindergarten represents the first learning experience away from home. "From the first eventful day of school, the child must depend upon speech and language to serve him socially and academically in this new major sphere of his life" (England, 1970). Whether it be in the classroom, on the bus, in the playground, or at lunchtime, the child's verbal interactions can supply him with information, guidelines, and directions in learning. Regardless of the extent of the child's language abilities at the onset of his formal education, there is always room for continued language development throughout school life. Because language is an important tool for a pupil's adjustment and learning, it's obvious that we

should be able to detect and to diagnose language problems of children entering into the world of formal education.

It is very unlikely that any educator would assume that any two children entering kindergarten would possess the same degree of linguistic ability. It is a proven and an accepted fact that individual differences do exist among five year olds in degree of language development.

However, if these existing differences in degree of language development are not differentially diagnosed, then they may really have no significant meaning. For example, consider a "culturally deprived" child who appears to have a limited vocabulary both receptively and expressively. Formal test results may verify this observation. But do the test results indicate that he is deficient in comprehension and use of only middle-class vocabulary or of all classes? Perhaps with further analysis, it might be found that he has a very well-developed language which adequately and normally fits into his class of society but differs from that in middle-class society which is the standard or basis for evaluation of language development in the school setting. So before making a final evaluation on these differences in degree of language development, it is also necessary to have an understanding of the circumstances which cause, maintain, and may even be a justification for a language deviation. Many teachers and clinicians lack training and experience in making a differential diagnosis and, therefore, base their judgments on degree of language development solely on personal observation and/or a single test result.

Even though methodological tools for quantifying attributes of oral language are available, they do not appear to be widely used by teachers and clinicians for various reasons. Following is a list of some of the existing reasons. (1) The language area of speech correction is a relatively new one involving the task of testing and evaluating degrees of language differences and many of the teachers and speech clinicians are not trained or experienced in this area. Therefore, many of them do not use the various tools available. (2) Many teachers and clinicians who are aware of these existing tools have not been trained to use them. (3) For example, if children are found who need complete linguistic analyses, time schedules of teachers and clinicians will usually not permit such. (4) The cost factor is another reason that various tools are not used. Many clinicians and teachers are not allowed to purchase these much needed methodological tools. (5) After a teacher or clinician tests and makes an evaluation, if changes are indicated, then ways of obtaining these changes are often unknown to him. (6) The validity and reliability of many tests are questionable. Does the test "do" what it proposes? If it states the purpose as being to assess receptive language, does it? If test procedures are duplicated, will the results remain the same? How many outside variables need to be controlled to obtain valid and reliable results? Because of these questions, clinicians seem hesitant to use available tests.

Teachers and clinicians are victims of a linguistic evolution. Speech clinicians once considered a language problem to be a deficiency in vocabulary and/or grammatical forms. Language now is viewed as a linguistic structure having phonemic, syntactic, and semantic features. Because of the emphasis placed on language abilities of children and the need for these abilities to be assessed and evaluated, teachers and clinicians are beginning to feel pressured because of their lack of training, lack of time for evaluations and lack of money to purchase the tests available.

During the last several years, at least in the state of Illinois, clinicians have also been faced with a change in job description. They are no longer speech clinicians but speech and language clinicians. They are continually faced with the question, should this be treated as a speech or language problem? Many times clinicians will disagree on a diagnostic label for a problem. For example, is the omitted final /s/ on words considered a speech or language problem? Clinicians now recognize the fact that a final /s/ sound on words can act as a morpheme as well as a phoneme. Articulatory patterns of some children are the result of poor perception of the morpheme and/or the linguistic form of the sentence while in others it is a problem of production of isolated sounds, not one of sound sequences.

There is obviously a growing awareness of existing language differences and a lack of a practical means for identifying assets and deficits specifying levels at which a child is functioning in the classroom or

clinical situation. There is definitely a need to provide teachers and clinicians with a quick, pragmatic, reliable and valid estimate of expressive language ability in kindergarteners. "That is to say, there is a need for a screening index of expressive language ability, one which will satisfy four criteria of practical concern to teachers and clinicians: 1) Quick administration, scoring and interpretation, yielding a maximum amount of information in a minimum amount of time, (2) practical for use in academic environments, requiring minimal cost and examiner skill, (3) reliable, yielding consistency of measurement, and (4) valid, relating highly to some logical outside criteria" (Webb, et al., 1971). Such an instrument would be useful in providing teachers and clinicians with information about kindergarteners' 'pre-entry' knowledge about expressive language skills. It would give them a means of evaluating a child's language status and comparing his performance to that of his peers. It will also be a useful tool in determining those children who need a complete linguistic analysis to determine his specific deficits and also to help determine the types of language activities which will help him in developing better language skills. In order to make such determinations, controlled analyses are required but knowledge of baseline behavior is a prerequisite for making such analyses.

In a previous investigation, Webb, Keenan, Griffith and Miner (1971) examined the feasibility of developing a screening version of the Length-Complexity Index (LCI) which would provide public school clinicians with

a quick, practical, reliable and valid means of assessing oral language development in kindergarteners. Their study concluded that it was feasible to develop a LCI screening form.

The primary purpose of this investigation was to cross-validate the LCI screening form as developed by Webb, Keenan, Griffith and Miner (1971). A cross-validation consists of systematically replicating a prior study to broaden its generality. The general methodological procedure consisted of systematically replicating the initial developmental investigation and extending it to include construction of a master training scale for training clinicians in use of this screening index. Specifically, the following questions were posed at the outset of this study.

1. What is the shape of the distribution of the LCI screening scores for a population of five-year-olds?
2. To what extent can observers reliably scale response segments from the LCI screening form?
3. What is the relationship between LCI screening scores for five-year-olds and observers' judgments of degree of language development?
4. Can language clinicians be reliably trained to utilize the LCI screening form?

CHAPTER II

REVIEW OF LITERATURE

Being victims of a linguistic evolution, teachers and clinicians find themselves in need of a practical means of making assessments of expressive language abilities of kindergarteners. However, there are no practical means of making such assessments in the clinical or classroom situation. As a consequence, teachers and clinicians have no clear delineation of assets and deficits specifying the level at which each child is functioning. There is a need for a quick, pragmatic, reliable and valid means of estimating expressive language ability in kindergarteners.

One of the major objectives of early childhood education is the development of oral language. Because language is an important tool for a pupil's adjustment and learning, we should be able to detect those kindergarten children who are having problems in language development as they enter into the world of formal education. At present, there is no screening form available which is quick, pragmatic, reliable and valid in assessing oral syntax of kindergarten children.

Table 1 shows a chart of the available screening tests used in assessing various aspects of language abilities in children. From looking at the

TABLE 1

CHART OF EXISTING SCREENING TESTS OF LANGUAGE ABILITY

Name	Assessment	Age	Practicality	Validity	Reliability
1. PPVT	Verbal intelligence (hearing vocabulary)	1-6 - 18 yrs.	10-15 min.	Correlated high with other tests - questionable	.77 median
2. ACLA	Sequential processing indicate starting point for therapy	Young children	10 min.	Not available	Not available
3. QT (3 forms)	Verbal-perceptual intelligence	2 yrs.-grade 12 (adults too)	3-5 min. (1 form) 6-10 min. (3 forms)		.73 for kindergarten
4. NSST	Syntax	3-8 yrs.		Not available	Not available
5. Token Test	Receptive lang.	K-grade 6	15 min.	Validity suggested	Not available

chart, it appears that there is a real need for development of a screening measure of oral syntax in kindergarteners.

In a previous investigation, Webb, Keenan, Griffith and Miner (1971) examined the feasibility of developing a screening version of the Length-Complexity Index (LCI) which would provide public school clinicians with a quick, practical, reliable and valid means of assessing oral language development in kindergarteners. Their methodological procedure consisted of: (1) Doing an item analysis of the responses from 300 children to 15 different verbal directives. (2) Identifying the verbal directive in which the LCI scores were essentially normally distributed. Verbal directive "Tell me about your family" was selected as meeting the criterion. (3) From the language corpus, 75 response segments were randomly selected for further analysis. (4) The 75 response segments were presented in written form to a group of observers to be rated by the psychological scaling method of equal-appearing intervals (EAI).

The results of the study were as follows: (1) Children entering kindergarten will obtain an essentially normal distribution of LCI scores in response to the verbal directive "Tell me about your family." The LCI screening form has its greatest utility in identifying those children who need further psycholinguistic analyses. (2) Observers can reliably scale response segments to the verbal directive "Tell me about your family." (3) There was high positive relationship between LCI scores and mean psychological scale values ($\eta = 0.89$). (4) The LCI screening version

is a quick, practical, and reliable tool for assessing expressive language ability in kindergarteners.

The various methods used in an investigation are carefully selected. The method of psychological scaling, used in the above investigation, is frequently used in investigations involving language abilities of children. Several recent investigations (Sherman, Shriner and Silverman, 1965; Shriner, 1967; Shriner and Sherman, 1967; Sherman and Silverman, 1968; Miner and Silverman, 1969) provide strong evidence that psychological scaling can be useful in assessment of a child's language development, including its use as an outside validity criterion for the evaluation of new measures of linguistic performance. When using psychological scaling, a number of methodological problems arise. One being the scaling method to utilize. Sherman and Silverman (1968) found little difference in scale values derived by the method of equal-appearing intervals and direct magnitude estimation. The scaling method of equal-appearing intervals is the most popular technique used, because of its ease of administration, reliability of scale values and minimal underlying assumptions concerning the observers' abilities (Young and Downs, 1968). Other procedure problems are concerned with the way in which the stimuli are presented, auditorally vs. visually. In a recent study, Miner and Silverman (1969) found that either auditory or visual presentation of the stimuli will yield comparable results ($r = 0.956$). Webb, et al. (1971) presented their stimuli visually to a panel of observers to scale. Procedures used in

a particular investigation, play a very important part in that study.

The Length-Complexity Index (LCI) is the newest measure of expressive language ability in children. Because language production increases in length as well as complexity with increase in chronological age, Shriner (1969) felt that a procedure which combined both length and complexity of a response into a single measure would prove to be a useful tool. A length-complexity measure was formed (Shriner, 1969) based on the research of Menyuk (1964a), Cazden (1965) and Bellugi (1964). The LCI is a linguistic measure designed to make a composite analysis of sentence length and complexity, which are considered together, according to a numeric weighting system. The child's final LCI score is the sum of his noun phrase (NP) points plus verb phrase (VP) points plus additional points (AP) for each sentence divided by the number of sentences (NS).

$$(LCI = \frac{NP1 + VP2 + AP}{NS}) \text{ (Miner, 1969).}$$

There have been many discussions in the literature of the LCI scoring procedure (Miner, 1969), its reliability (Barlow and Miner, 1969; Griffith and Miner, 1969) and size of language sample (Griffith and Miner, 1969). Recently, a study was done to demonstrate the construct validity of the LCI (Hon, 1970). Until this study, the LCI had not been shown to assess child language as it's perceived by observers. The study concluded that observers can reliably scale single utterances obtained from children's language samples ($r = 0.97$). It is also concluded that the LCI is a highly sensitive indicator of observers' judgments, when based upon single utterances. And finally,

the LCI is a benenericial tool that will aid the speech pathologist in analyzing language development in children five years and younger.

In view of the existing screening test and the feasibility of developing a LCI screening form (Webb, et al., 1971), the present investigation was undertaken.

CHAPTER III

METHODOLOGY

This chapter discusses the subjects, equipment and procedures used for this investigation.

Subjects

The 75 subjects who participated in this study were children living in Decatur, Illinois, in October of 1971. They were selected on the basis of age and articulation. These criteria for the selection of subjects are discussed below.

Age

Those children who fell within the age range of four years, nine months to five years, three months, as determined by their recorded date of birth, were considered for the study. This was the range of ages used in the previous study by Webb, et al. (1971). There were 39 males and 36 females selected on the basis of age and attendance in kindergarten in the Decatur Public Schools. The mean CA for the males was five years, one month with a range of four years, eleven months to five years, three months. The mean CA for the females was five years, one month with a range of four years, ten months to five years, three months.

Articulation

Children exhibiting multiple articulation errors which made their speech unintelligible, as determined by the examiner, were excluded from the study. Also, children exhibiting omission of the final /s/ and /z/ phonemes were excluded. Five children were omitted from the study because of not meeting the criterion for articulation. (One unintelligible and four having omitted final /s/ and/or /z/ were excluded.) After identifying those children who met the above criteria, a random sample of that population was chosen. From a population of 250 children, 138 met the above criteria. From those 138 names, 75 names were drawn by lot to represent the subjects for the investigation.

Eliciting language samples.--The stimulus items employed to elicit language samples from the 75 subjects were those which met the criterion in the previous study by Webb, et al. (1971). The criterion for selection of a verbal directive was one which had a normal distribution of LCI scores. From the 15 verbal directives constituting the corpus of the LCI, the one directive which was found most closely to approximate the normal distribution of the LCI scores was, "Tell me about your family." In the present investigation, three of the 15 original verbal directives were chosen on the basis of the previous criterion. Those verbal directives which were found to be most appropriate, according to the criterion, were "Tell me about your family," "Tell me about your favorite toys," and "If you had a whole day to do what you wanted, what would you do." It was felt by choosing

three verbal directives that if the LCI scores for "Tell me about your family" did not have a normal distribution, perhaps the LCI scores for one of the other two verbal directives would have a normal distribution. The same examiner presented the three verbal directives in a random order to each subject after the initial rapport building period. During this rapport building period the same three verbal directives were presented to each subject. Those verbal directives were as follows: (1) "What do you want to do when you grow up"? (2) "What's the funniest thing you every saw"? (3) "What would you say if an elephant came to dinner"? Following the rapport building period, the 75 children's response segments to each of the randomly presented verbal directives were tape recorded on a Wollensak tape recorder, model T-1500.

Transcribing and scoring the response segments.--The examiner listened to the tapes and transcribed each of the 75 children's response segments to the three verbal directives. The measure used for analyzing or scoring each response segment elicited was the Length-Complexity Index (LCI). The rules for scoring the LCI were developed independently by Cazden (1964), Bellugi (1965), Hurley (1967) and Shriner (1967) and then synthesized by Miner (1969). There was a total of 225 response segments to transcribe and score.

Scorer reliability.--Inter-scorer agreement for the examiner and one other trained observer was obtained for the LCI scoring of the 225 response segments. The resulting Pearson Product Moment Correlation Coefficient

between the two scores was 0.97 indicating a high amount of agreement among scorers.

Preparation of stimuli.--Specifically, the shape of the distribution of LCI scores for each stimulus was determined using base structure scores as the unit of analysis. It was essential to analyze the skewness or symmetry, and kurtosis or peakedness, of the distribution for each stimulus. A negatively skewed distribution indicates a "piling up" of scores on the positive end of the scale. A positively skewed distribution indicates a "piling up" at the negative end. A leptokurtic distribution illustrates a decided peakedness. A platykurtic distribution is very flattened. A mesokurtic distribution represents a normal or bell-shaped curve. Each of these distributions has specific discriminative powers which help in determining the frequencies of the range which are the more sensitive. It is essential to know these discriminative powers because even though a normal distribution is reached, it's necessary to know the frequencies of a distribution. For the LCI scores, it was decided that a normal distribution with the smaller frequencies at the ends of the range would have its greatest discriminative power in identifying those children delayed in language or accelerated in language. Of the three verbal directives, the responses to "Tell me about your family" were evenly distributed with a mean of 6.0, kurtosis of .1928 and a skewness of .4966 indicating an essentially normal distribution of scores with the smaller frequencies at the ends of the range. The stimuli from which the psychological scale

values of language development were obtained consisted of the response segments evoked from the verbal directive "Tell me about your family." A total of 75 response segments were presented to a judging panel to be scaled.

Description of scaling method.--Because this was a systematic replication of the study by Webb, et al. (1971), the psychological scaling method of equal-appearing intervals (Edwards, 1957) was used. The method is one in which the observer is instructed to assign numbers to the stimulus in relation to a seven point equal-appearing scale. The principle assumption underlying this method is that observers can reliably equate intervals between responses to stimuli. A seven point equal-appearing intervals scale of "intricacy of language usage" was used with one representing least intricacy of language usage and seven representing most intricacy. For the purpose of this experiment, "intricacy of language usage" was defined as the ability to organize words in meaningful ways for the purpose of conveying information.

Selection of observers.--The panel of observers chosen to rate the response segments consisted of undergraduate students in the Department of Speech Communication and undergraduate students enrolled in Speech Pathology and Audiology course 260 at Eastern Illinois University. The only restriction placed on the selection of the judging panel was the elimination of any student who had previously been enrolled in a course in language development.

Presentation of stimuli.--The response segments were presented to the observers in the form of a typed manuscript. Research by Miner and Silverman (1969) found a high relationship among scale values when the stimuli for scaling was presented visually and auditorily. Each stimuli was numbered and the judges were asked to record their judgments on the answer sheet to the left of the corresponding number. A sample of the instructions to the judges, a list of the 75 response segments and a sample answer sheet can be found in Appendices I-III.

Analyses of observers' ratings.--The observers' ratings were transferred from the answer sheets to IBM data cards from which statistical computation was made. An intraclass correlation coefficient for averages (Winer, 1962) was computed to evaluate the reliability of the scale values. A desired level of reliability for this investigation was set at 0.95. The mean, median and semi-interquartile range for each of the 75 stimuli was computed. To determine the relationship between LCI scores and observers' judgments, a Pearson Product-Moment Correlation Coefficient and an eta were computed. All statistical analyses were computed on an IBM 360 computer.

Construction of the master training scale.--In constructing the master training scale, 12 stimuli (2 per scale value 1-6) were selected from the 75 response segments whose scale values most closely approximated the integer values 1-7 with the least amount of variance. There were no stimuli which met the above criterion to represent the last level (7) on

the seven point equal-appearing interval scale. There were two samples chosen to represent each of the other levels (1-6) on the scale. The master training scale is shown in Appendix IV.

Selection of a panel to assess reliability of utilization of the master training scale.--The panel consisted of seven female graduate students enrolled in an Introduction to Graduate Study offered by the Department of Speech Pathology and Audiology at Eastern Illinois University. Background information of this investigation was made available to the panel of speech pathologists. Each was given a copy of the master training scale and told to acquaint himself with the scale. After a period of 20 minutes of studying and discussing the scale among themselves, they were given, in random order, the 12 response segments which constituted the master training scale. They were asked to read each response segment and record their judgment on an answer sheet. Their judgments were to be made using a six point equal-appearing interval scale. A six point equal-appearing scale was used instead of a seven point scale, used by the naive observers, because in analyzing the 75 stimuli, there were no stimuli which met the criterion to represent level seven. Therefore, the master training scale was based on a six point equal-appearing scale and the trained observers made their judgments using this scale. Following the period of judging the 12 stimuli, the panel was again asked to read over and study the master training scale. Twenty other stimuli (see Appendix V) from the original

corpus of 75 stimuli were randomly selected using a table of random numbers. These 20 stimuli, unfamiliar to the panel, were presented for judgment using the same basis for making judgments on the 12 original stimuli presented to the panel. An intraclass correlation coefficient (unadjusted for trends) was computed to evaluate the reliability of the panel in scaling the stimuli constituting the master training scale and in scaling the 20 unfamiliar stimuli.

CHAPTER IV

RESULTS

The purpose of this investigation was to cross-validate the LCI screening form as developed by Webb, Keenan, Griffith, and Miner (1971). Four questions were posed at the outset of this study. This chapter lists the questions, reports the statistical computations and interprets the results.

1. What is the shape of the distribution of LCI screening scores for a population of five-year-olds?

It seemed desirable to develop a screening index of expressive language ability that would be particularly sensitive to those children whose linguistic performance varies from average classroom performance. As Horst (1966) observed, "the frequencies of a distribution should be smallest in that interval of the range where it is desirable to have the greatest discrimination." Therefore, a distribution of LCI scores which met the above criterion of having a normal distribution with its smaller frequencies at the ends would have its greatest discriminative power in identifying the language delayed and the language accelerated child.

In looking at the distribution of the LCI scores for "Tell me about your family," the researcher found the criterion, of having a normal distribution with its smaller frequencies at the ends of the range, appeared to be met. To assess the symmetry of this distribution, statistical measures of skewness and kurtosis were computed. The resulting values for both statistical measures were less than 0.50, which according to Griffin (1964), indicate an essentially normal distribution of scores (mean = 6.0; kurtosis = .1928; and skewness = .4996). Since the LCI screening scores, from the verbal directive "Tell me about your family," satisfied the criterion, the other two verbal directives "Tell me about your favorite toys" and "If you had all day to do what you wanted, what would you do" were disregarded.

The results of this investigation to the question stated above were compatible to the results obtained in the previous study by Webb, et al. (1971).

2. To what extent can observers reliably scale response segments from the LCI screening form?

To answer this question, a scattergram was first plotted between the two variables to get an indication of the magnitude and direction of the relationship among the variables. The relationship was essentially curvilinear throughout the range.

As a consequence of the curvilinear relationship throughout the range, the eta correlation rather than the Pearson r was chosen as the preferred

statistical measure to assess the relationship between mean scale values and LCI screening scores. As Downie and Heath (1965) note, "The size of the r reflects the amount of variance that can be accounted for by a straight line, whether the data are essentially linear or not. It is possible that a very high, but not linear, relationship will appear very low on the basis of a Pearson r. The eta correlation coefficient reflects the variance accounted for by the best-fitting line, whether it be curved or straight."

The resulting eta value was 0.40 indicating that the two variables did not rank order themselves in a stable, consistent order.

One might hypothesize, the reason for the low eta value is that when observers rate very intricate child language samples, a point is reached, according to Information Theory, where the greater amounts of syntactic information results in greater uncertainty on the part of the observers as they assign scale values. On a theoretical level, the higher levels of uncertainty accompany intricate syntactic structures may account for the curvilinear relationship noted in the scattergram.

On a statistical level, the curvilinearity may also be due in part to the discrepancy between the ranges for the two variables. That is, the scale values could vary only from one to seven whereas the LCI values ranged from one to 921.

The resulting eta value of 0.89 for the previous study by Webb, et al. (1971) indicated a high relationship between the two variables while the eta value of 0.40 for the present study resulted in a low relationship

between the variables. It seems tenable that discrepancy among the two studies might be due to differences in the ranges of the LCI scores. The LCI scores ranged from 1 to 43 in the Webb, et al. study (1971), while a range of 1 to 921 was found in the present investigation. Because of the larger range (1-921), there is more variability which results in greater uncertainty on the part of the observers as they assign scale values. This variability was viewed on the scattergram. Visual inspection of the scattergram revealed a linear regression and homoscedasticity within the low end of the range of scores (approximately 1 to 50) and a conspicuous lack of homoscedasticity plus curvilinearity beyond this point (51-921).

4. Can language clinicians be reliably trained to utilize the LCI screening form?

In order to determine whether clinicians could be reliably trained to use the LCI screening form, two sets of stimuli were presented for scaling. The first set, presented for scaling, consisted of the 12 stimuli constituting the master training scale and the second set, presented for scaling, consisted of 20 unfamiliar response segments randomly selected from the remaining 75 original response segments.

To determine the reliability of the clinicians in scaling the 12 stimuli, an intraclass correlation coefficient for unadjusted trend was computed. In this study, the examiner was interested in knowing to what extent the panel of judges assigned the same absolute scale value to each stimulus. These requirements necessitated the correlation for unadjusted trend.

The resulting intraclass correlation coefficient (unadjusted trend) was 0.98 indicating that clinicians can reliably scale response segments with a minimal amount of variance. In other words, there was an extremely high amount of interobserver agreement relative to assigning the same scale value for each stimulus item.

An intraclass correlation coefficient for unadjusted trend was also computed as an estimate of the reliability of the panel to rate the 20 unfamiliar stimuli. The obtained value was 0.60 indicating that there was considerable response variability among the observers.

From these statistical measures, results show that the trained observers (clinicians) were able to reliably scale the 12 stimuli representing the master training scale, but were unable to reliably scale the 20 unfamiliar stimuli.

In scaling the 20 unfamiliar stimuli, the confusion seemed to be at the midpoints along the scale and not at the ends of the range. This response variability, in the midpoints, is unimportant for some clinical purposes. As for the LCI screening form, what is most important is being able to distinguish those children at the ends of the range; Children who are accelerated in language abilities or more importantly, those who are delayed in language and in need of a complete psycholinguistic analysis.

In an effort to account for the eta value of 0.60, a chart, shown in Table 2, was made to demonstrate the similarity in the variance of both sets of observers in assigning a scale value to a stimulus. For example,

look at stimulus number 2 in the first column. The naive observers rated this stimulus as being a four, which was the closest whole integer number when considering a mean of 4.13 and having a variance of 0.91. When looking at the distributions of scale values for the trained observers, one can see that 72% assigned a scale value of four with 14% assigning a scale value of three and 14% assigning a value of five. When considering the variance of 0.91 for the naive observers, this distribution of the scale values for the trained observers is very similar in variance.

The eta value of 0.50 may be a conservative indication of the reliability of the trained observers to assign the same scale value to each stimulus as previously assigned by naive observers. Since obviously, the two sets of observers were either from the same population or had similar standards for assigning a particular scale value.

TABLE 2

EQUAL-APPEARING INTERVAL SCALE 1-6

Stimulus #	Scale Value Naive Observers	Scale Values of Trained Observers - Percentages						Mean	Semi- Interquartile Range
		1	2	3	4	5	6		
1	4			86%		14%		3.73	2.01
2	4			14%	72%	14%		4.13	0.91
3	4				43%	57%		4.52	1.47
4	4			43%	14%	14%	29%	4.41	0.93
5	2		100%					2.41	1.06
6	3			14%	86%			3.18	0.89
7	5				14%	58%	29%	4.91	1.43
8	4		29%	71%				3.64	1.46
9	4		29%	58%		14%		3.71	0.84
10	3			14%	86%			3.48	0.90
11	3			14%	58%	29%		3.37	0.81
12	4			72%	28%			3.61	0.84
13	5					29%	71%	5.20	1.00
14	3		14%	72%		14%		3.57	0.96
15	4				58%	28%	14%	4.19	0.92
16	3			42%	58%			3.57	1.43
17	5				28%	58%	14%	4.86	1.43
18	5				14%	72%	14%	4.62	0.90
19	5			28%	44%	28%		5.17	0.98
20	4			72%	14%	14%		4.04	1.43

CHAPTER V

SUMMARY AND CONCLUSIONS

Intensive educational focus on language development is a phenomenon of the past ten years. There is a growing awareness of existing differences in degree of language development in children and a lack of a practical means for identifying assets and deficits specifying levels at which a child is functioning. There is a need, therefore, to provide teachers and clinicians with a quick, pragmatic, reliable and valid estimate of expressive language ability in kindergarteners.

In a previous investigation, Webb, Keenan, Griffith and Miner (1971) examined the feasibility of developing a screening version of the Length-Complexity Index (LCI) which would provide public school clinicians with a quick, pragmatic, reliable and valid means of assessing oral language development in kindergarteners. Their study concluded that it was feasible to develop a LCI screening form.

Although the previous study by Webb, et al. (1971) concluded that it was feasible to develop an LCI screening version and the results met the criteria set forth, the question of the generality of the responses to the screening form remained unanswered. In order to broaden the generality

of this measure, a cross-validation of the LCI screening form was needed.

The primary purpose of this investigation was to cross-validate the LCI screening form as developed by Webb, Keenan, Griffith and Miner (1971). The general methodological procedure consisted of systematically replicating the initial developmental investigation and extending it to include construction of a master training scale for training clinicians in use of this screening index. Specifically, the following questions were posed at the outset of this study:

1. What is the shape of the distribution of LCI screening scores for a population of five-year-olds?
2. To what extent can observers reliably scale response segments from the LCI screening form?
3. What is the relationship between LCI screening scores for five-year-olds and observers' judgments of degree of language development?
4. Can language clinicians be reliably trained to utilize the LCI screening form?

Some of the problems that occur when developing a measure for assessing language abilities in children are problems of methodology. The method of psychological scaling has been proven useful in assessing children's language development as demonstrated in several recent investigations (Sherman, Shriner, and Silverman, 1965; Shriner, 1967; Shriner and Sherman, 1967; Sherman and Silverman, 1968; Miner and Silverman, 1969). When using psychological scaling, researchers meet problems concerning the scaling method to be utilized and manner in presenting

stimuli to be scaled. In the previous study by Webb, et al. (1971), the psychological scaling method of equal-appearing intervals was used. A seven point equal-appearing intervals scale of "intricacy of language usage" was employed with one representing least intricacy and seven representing most intricacy. Because this was a systematic replication of the study by Webb, et al. (1971), the psychological scaling method of equal-appearing intervals was also used in this investigation.

Response segments of 75 kindergarten children, chosen on the basis of age and articulation, were elicited from the verbal directive "Tell me about your family," "Tell me about your favorite toys" and "If you had a whole day to do what you wanted, what would you do"? These response segments were transcribed and scored according to the LCI scoring procedures (Miner, 1969).

The shape of the distribution of LCI scores for each verbal directive was determined. The response segments to the verbal directive "Tell me about your family," which had LCI scores normally distributed, were used for further analyses. These 75 response segments were then presented in written form to a panel of naive observers to be rated, using the psychological scaling method of equal-appearing intervals.

Statistical computation of the observers' ratings was made in order to identify scale values of the stimuli. These stimuli, on the basis of a mean scale value, were then used in construction of a master training scale. The master training scale was then presented to a panel of

trained observers (clinicians) to see if clinicians could reliably be trained to use the LCI screening form.

The results of this study warrant the following conclusions.

(1) Kindergarten children will obtain an essentially normal distribution of LCI scores (skewness = .4996; kurtosis = .1928) in response to the verbal directive "Tell me about your family." As a consequence, the LCI screening form has its greatest discriminative power in identifying those children who may be accelerated in language or those who are delayed in language and in need of a complete psycholinguistic analysis. These results were comparable to the results obtained in the previous study by Webb, et al. (1971).

(2) Observers can reliably score response segments to a verbal directive with a high degree of reliability. The resulting r was 0.98 as determined by an intraclass correlation coefficient. This finding was of comparable magnitude to the 0.97 coefficient obtained in the Webb, et al. (1971) study.

(3) In this study, it was found that the two variables (LCI screening scores and mean psychological scale values) did not rank order themselves in a stable, consistent order. The results of the previous study indicated a high positive relationship between the variables. It seems tenable that discrepancy among the two studies might be caused by differences in the ranges of the LCI scores. The LCI scores ranged from 1 to 43 in the Webb, et al. (1971) study, while a range of 1 to 921 was found in the present

investigation. Because of the larger range (1-921), there was more variability which resulted in greater uncertainty on the part of the observers as they assigned scale values.

(4) From the statistical measures, results showed that trained observers (clinicians) were able to scale reliably the 12 stimuli constituting the master training scale, but were unable to scale reliably the 20 unfamiliar stimuli. However, in scaling the 20 unfamiliar stimuli, the confusions seemed to be at the midpoints and not at the extremes. And for the LCI screening form, what is important is being able to distinguish those children at the ends of the range, those who are either delayed or accelerated in language.

(5) From the results of the previous study (Webb, et al., 1971) and from this study, it would appear that the LCI screening form is a quick, pragmatic, reliable and valid tool for assessing expressive language ability in kindergarteners to find those at the extremes. Test administration typically takes one minute or less. When a clinician has been trained to the master training scale, the results of the LCI screening version can be interpreted in a matter of seconds. Further, it has been found in this investigation that clinicians can reliably be trained to utilize the LCI screening form for identifying those children who are either accelerated in language or delayed in language and in need of a complete psycholinguistic analysis.

Further research is warranted in two areas involved with making assessments of children's language abilities. One area needing more research is that of observers' judgments. Will observers make the same kind of judgment on a response segment that is transcribed verbatim, as they would on the same response segment that had the redundancies and revisions omitted. Perhaps the redundancies and omissions might interfere with the observers being able to see a "true picture" of the child's expressive language abilities.

Another area needing more research is that of the population of subjects evoking response segments to be scaled. In this particular investigation, it was noted that observers had little difficulty in determining the stimulus extremes (language delayed and language accelerated children's responses), but those stimuli falling in the middle of the range, presented something of a problem. This result was understandable since 75 percent of the stimuli fell at the midpoint of the scale (either 3's or 4's). That is to say, the judges had a difficult time differentiating among the stimuli because, according to the naive observers, there were very few actual differences. Whether other judging populations would replicate this finding is an unanswered but researchable question.

APPENDIX I

INSTRUCTIONS TO OBSERVERS

You are asked to judge a series of response segments of children's oral language presented in written form. You are to judge each sample in relation to a seven point scale of "Intricacy of Language Usage." Intricacy of language usage, for the purpose of this experiment, is defined as the ability to organize words in meaningful ways for the purpose of conveying information. For example, consider the following four segments which might be judged to vary with respect to intricacy of language usage as defined here:

- a. dog
- b. the big dog
- c. the big dog is running
- d. the big dog is running around the house

It is obvious that these examples vary with respect to word organization for the purpose of conveying information.

Following there will be 75 response segments to be rated on a seven point scale. These segments were obtained by requesting children to respond to a statement-- "Tell me about your family." This statement is not included in the material you are to judge. All of the segments are in re

response to this same statement and include everything that a given child said in reply to the statement.

Make your judgment on the basis of the total response segment. Avoid being influenced by grammatical correctness; for example, "we was" and "we were" while different grammatically do not differ with respect to intricacy of word usage. Do not give a rating based upon a judgment of the extent of vocabulary; for example, "big size" and "extensive area" are equivalent as far as the intricacy is concerned, but they probably would not be considered equivalent if judged for the purpose of rating vocabulary. Also, avoid being influenced by the size of the response segment or the length of the single utterances; example, "a cat, a dog, a bird, and a mouse" though longer than "she ran away" is less intricate in terms of word usage. The blank () in some sentences means that the child said something but that it could not be understood.

The scale is one of equal intervals--from 1 to 7--with 1 representing least intricacy of language usage and 7 representing most intricacy; 4 represents the midpoint between 1 and 7 with respect to intricacy; the other numbers fall at equal distance, along the scale. Do not attempt to place samples between any two of the seven points, but only at these points: 1, 2, 3, 4, 5, 6, or 7.

Each language sample is preceded by a number. Your task will be to record your judgment on your answer sheet to the left of the identifying number of the language sample.

Before you record any judgments, read quickly through the 75 response segments in order to acquaint yourself with the experimental task and the range of segments which you will judge with respect to the intricacy of language usage. After you have acquainted yourself with the range and the task, make a judgment on every sample. If you are somewhat doubtful, make a guess as to the most suitable scale position.

APPENDIX II

RESPONSE SEGMENTS TO VERBAL DIRECTIVE--

"TELL ME ABOUT YOUR FAMILY."

1. Poppy workin. He come home for eat. Go back to the work at night. Go to bed. Go to sleep. Get up in the morning. Go to work. Go to back to work. Go to work at night. Come home and eat. Go home. Go to ni, go to sleep. Go to bed. Go home for eat.
2. My daddy got a job at _____.
3. I don't know about my family. I don't know.
4. I have a _____. We go to our grandma's and stuff. And we eat supper and stuff. And a--we get candy and stuff. That's it. That's all we do.
5. My family--and--I got--my family--bunch of times. I dream about this. My sister had a baby. She did. I didn't know and she and she, and I thought she had a dad and she didn't and she and I thought she pregnant. And her baby real. And he'll pull your hair, out here. And then he can cry either. And if somebody hit him, my sister said, not the sister pregnant, my sister, my little sister, she said she gonna beat her butt. And then she said she don't want anybody know that _____, and that's all.
6. Their names? Did you every see my mom? Do you know her name? I do. Freitas and my father's name is Floyd, just like mine. And my sister's name is Susie and Cindy and Sharon. And our house is yellow. And we got a white car. And the address is something, what I don't know, 57 Oil Drive.
7. My daddy works at Caterpillar and my mommy works at home. I don't do nothing, but play outside.
8. (No response from this child; scale accordingly.)

9. You mean like my family names? My mom's name Daisy. My dad's name, I don't know what my dad's name, but my brother's name Robbie. My name's Angela Sue Crowe.
10. Carol. Carol.
11. I can't think what my mom's name is. My mother's Cathy. My dad's name is Joe and my sister's name is Stacy. My dog's name is Polly. I had some pups, but we didn't name our pups yet. Well, I can tell you about bulls. Have you ever seen a bull fight? Neither have I. Have you ever went to a circus and seen a bull? Neither have I.
12. My dad and moms works. I don't know what else I can think of. There's nothing else I can think of. That's all I can think of.
13. I don't know about my family.
14. When they come over here, they play with me. All of 'em. The mother hollar about 'em, they come. And--but other ones come, their mom hollar about 'em, and, they comes, they come and they say _____ and I let them play with my toys.
15. Well, I got a sister. And she's, I think she's one or two, I don't know. My dad goes to Caterpillar and he works at store too. And my mom goes--my mama--mommy makes spaghetti sometimes for me. And sometimes my mommy lets my sister get up and play with my toys, sometimes. And sometimes, sometimes when people go by, they see the pumpkin I make at school. And my dad, sometimes, mows the gr--, know I mean, sometimes, I think he cuts the ledge on the--the--the ledge on the--around--our--around our house. You know what else my mom does? She takes my sister and she picks her out of bed and she just lets her play. That's all I can think.
16. I don't know about it.
17. That's my brother. That's my little bittie brother. Dad works. Mom and Dad. The house is falling down. And our trailer's falling down and.
18. Trisha, and James and Kritina and Ricky and George. And Grandma and Timons. And Aunt Patty and Ronnie. And _____.
19. Some of them are mean, one cousin. And he gets into trouble, my brother. We have one brother and more sisters. And we have a basement, when it tornadoes and we have to share the things going

down stairs, when tornadoes. But one time it did tornado and we went down stairs. Me and Jim played marbles. He wouldn't--he don't cuss down in the basement unless Dad's down there. When Mom's there, he cusses. He'll get trouble if Dad's there, he know it too. Some-time he done it when Dad was there and he got a whipping. He got spanks. Gosh, Jim might be out for something. He might be out football. I don't know.

20. I got a mommy and daddy. You see. My mommy name Jennifer and my daddy name Gerald Dave and my name is Daphane and Leigh's name is Leigha and Deena's name is Deena Kareotes and Chris name Kareotos too. See. And you got Windy too. See. And you got all a family. And you got Christie just a not a, she tiny baby. And she not bigger in us. She has to go to school with me. And when he goes to school, with me. She love this color, she going to live always. You see, she going to change house. And then this year, you see, our house--and this year--you see, when we got a back yard, play, go outside, see. She go outside, when a bell ring, it mean come out. You see. I wear my thing and Deana. Out the hall, then I, Deena gonna pick me up. That's all.
21. My mother is--she don't work anywhere, she just stays home most of the time. In the night, she goes bowling. Sometimes in the night, at the bowling alley near K-Mart, little bit close to K-Mart.
22. I have a sister and a brother and a baby. I have a daddy and a mama and a baby brother.
23. Well, we use to go to Tennessee. We used to stay there. We use to, I used to go too. Ron use to live there. My dad gets a brother, name Junior. I wanna talk about some tornadoes. They--they winds.
24. My--they love me. And my father Ken. And my brother likes me. And when I come home from school, he kisses me. And he wants some paper. And he wants my paper I bring home from school, but he can't.
25. Well, I have a little sister, she's two years old. She likes to do what I do. Everytime I do something. I draw on the chalkboard, she draws on it. I pull the door shut, she opens the door shut too. I turn off the light, turn it back on. She turns off the light, turn it back on. My sister's something. I never saw such a sister like that. My mom--I--well, she usually takes us anywhere we wanna go. And know how I so brown? Cause I been out in the sun all summer long. Mom didn't. Mom didn't get too brown cause she had to do work inside. My dad, he works nights and sleeps in day times. After--probably

after--probably two hours later, the same day, he'll get up. And he'll help mom. He, I meant my dad, usually takes me anywhere he wa--anywhere we wanted to go. My mom, she doesn't, I meant, she doesn't let us go mostly anywhere we wanna go.

26. My sister is going to go into junior high next year. She's still in school here. My daddy works at Caterpillar. Mommy doesn't work nowhere. She's still at home working. Probably on that dress.
27. They do lots of work and stuff. They fix lunch and supper. You know what I had for breakfast? A bowl of cereal. Taste like soup. My sister doesn't like it.
28. My mom always sits and watch her favorite shows and my sister goes out and plays with her friends. My aunt, he always drives around. My sister sits around and watches T.V. with my mother.
29. You mean their names?
30. My brother always tries to push his stuff down the steps when me and mom are in our bedrooms or something. And all a that. And he always pushes his walker and all a that. Well, I can ride my bike upon the circle when ever I want. And all a that.
31. You mean my cousins? Family? O.K. It's Monda, Susie, and Pam. Janet and April and that's all.
32. Todd use to be in kindergarten and he have, he ever--been in--here, Todd. I use to play with him when he was in kindergarten too. But he came--but they got two brothers, one's little and one's Chris, but he's 'bout that little. But he can walk, which isn't too little. We can swing on the teeter-totter. Most of the time he swings on teeter-totter instead. Them and Denise.
33. My sister name is Dawn--Dawn Michele. D starts first but I don't know what to do next. Dad, my daddy name is Bill. And my mommy name is Kathy. My dog name is Shontzie.
34. (No response from this child; scale accordingly.)
35. Like what? Well, my dad, I don't know what he does, but when he goes everywhere and don't let me go I want to go with him, camping churches. He buys me stuff. Like one time, he bought me a little black mouse with white eyes and then you pull it up and then the bottom goes up. Like that. My mom, well she's making mouses.

Me and my dad make football and I kick it real high. Well then, then I, then my dad goes in then watches the news and then when the news is all over I tell him to come back out and play football with me and so he does. And then he plays with me. And then at night he wrestles with me and then he _____. The other day when I tell him to come out and play football with me he does.

36. I don't know.
37. I don't know.
38. We has some Butch and JoAnn. We can have Missy and Debbie and Curtie. We have Cindy and we have Debbie and Carl. You know what our mommy and daddy's name is? Ronnie Shinall and Elaine Shinall.
39. My brother Joey lives way over on another side. Joey lives on another side. I got my picture taken. I got my picture taken last night. I get my candy sell. When my candy comes up here, I take it home and sell. My mom's going to give me the money, a dollar. When I saw the candy, the people got to give me the money. I got to go all over the place to sell candy.
40. I got a big brother and I got a baby brother. And my mommy's name Linda, my dad's named Jim, my baby brother name Jimmy, and my brother name Denny. Other name's Dennis. I don't know what else.
41. We we just _____. My mother layin down. Mother cooken. Mother give me some cookies and some _____. My brother playen and mother layen down. My dady he playin ball and Nick be playin cars and I be playin--I be ridin my bike.
42. There's four people. I don't know all about it. I know one thing too. All I knows, there's four people.
43. What about my family? Well, I don't have anything to tell about my family.
44. My daddy's name is Dick Palmatier. My mommy's name is Maxine Palmatier. My little brother's name is Todd Palmatier. And my little dog, he's a pup like, and he's, and his name and her name's Susie Palmatier.
45. My mom and dad--my mom stays home like mom babysits. My dad goes to work and Ronald stay out in the back yard and Randy just had her babies. Randy's a beagle hound.

46. I got a grandma name Shields and name White and a Duke and my dog name Sue--Susie.
47. My grandpa, he a--he works in a lumber yard and my mom she works over in the trailer park and Grandma she works over at Millikin Bank at the new Millikin Bank. And then at night time, if we go out to eat, I gotta stay dressed up, at night time, if we eat at home I can change my clothes. And then I can go out and play.
48. I have three families. One's name Todd, one's name Tim and one's name Happy and Mary. Well, one day we had a brother and he was real little and he got almost killed by a guy and he and I didn't know what to do. And my mom got a big boy and Tim took care of Todd and so. I like him so much, it keeps him from crying every time we take him to bed.
49. I don't got no family. I got a kitty cat and a doggie.
50. I use to have a dog but we shot it. I have a baby too. _____. Well, we have a garden too.
51. I know their names. I don't know anything about them. My dad works at the pool, golfers and swimmers. No one swims anymore. Its closed. I shot a B-B gun. A real one.
52. My brother's name is David Scott Rapp.
53. What do you mean? You mean what their names are? My dad chops wood a lot. My mom washes dishes a lot, you know. Doesn't that talk?
54. Well, you see, my sister isn't in school yet. And she gets all my things out. She--my--she's on Arizona Drive in a red house right now. And I think she is playing or she might be outside trying to climb a tree. Maybe the Pussy Willow tree. Oh, I see some _____ in your mirror. _____ in your mirror and a picture in your mirror.
55. You mean what they do? Well I--they--my mom puts me to bed at nine o'clock, cause I have to go to kindergarten every morning. And we got a colored T.V. and I watch it till nine. Last night, I was playing with my blocks and I built a church. And the other night I think, I builded three, well I build a whole town too. I think I builded three. The other day when I was at Warrensburg where we live, I was up at Kelly's, I think thats who it was, yeah, and our dog went out, and Randy was almost to get him and I was, and he was about to start

to bite. He was over at Kelly's house and was about to bite me. I think it was Randy I don't remember. I told my dad , and he was going into the front yard. I told him Michele was almost to bite. He didn't bite anyway but we got him back in the fence. I think my dad was still mowing then but somebody must have got him in. I think he just came in cause I made him. And, we got him in. Our glider is milled, you know what milled means? Some of the greens in the white paint. The other day, is kind of a long time yet, our glider got broke. I sure get mad. This time I'm going to have to put a stop sign at my fence. And then I'll put a green sign that says go, go in. And then, I'll get a lot of cars when I grow up, I want to get three cars.

56. I got a baby sister. Her name is Yogi. Thats all I got, names Yogi. My mommy feeds her. And I feed my puppy myself cause he'll bite you.
57. I don't know.
58. Well, our family had a pumpkin in our garage. Cause if they're in our bedroom they'll get hot, and it wouldn't be, you know the color of them. It wouldn't be on there, it just break in half. And I don't think my mom and dad had one, but I had two of them. So did my sister. We had a lot of them. Michele had to take Cindy back, then you know that, last Friday.
59. Larry. Larry.
60. Family.
61. My mommy, you mean my mommy's name? Mrs. Lewis. My dad's name is Chuck. My name is Chris, my dog's name Spot. I got no cats.
62. One time, I can't remember--the wrong way, when we came home. It was about--it was real dark when we got there, and then when we came back, it was a real long time. They gave us a picture of when we was a walking. And then, there was a sign, a real big sign up there, and with this man had a horn, a real big horn about that long, and he had, like something, like a magic hand, and he had red inside that jacket. And behind the sign we saw a man walking, just with his socks on. Even if it was raining down there where we were, we still could go swimming. We went to go back again and after that we came home. But before that we went somewhere. And then I had a apple. But when we went apple picking, my mom and dad had a apple. And then, one time when we went camping, we went down at my aunt's house. And we went over at Grandpa Hale's and I climbed up a

sideways tree, and then, when I was comin down, then I was holding on to the tree, and it fell to another tree. And shoe came off. And I dropped, when I was coming close to the tree. And then, that someone else, we went where there was this pole and I mean it wasn't no pole, it was a tree with no, with not any branches on it, with not any leaves on it. And then, there was one with some branches on it, with not any leaves on it. And we went down there, but those were already chopped down. And we went somewhere else, and doing, my dad found clump of _____, I think, which goes behind his tractor. And--but when we was comin there we saw this thing, and we wondered what was in it, so went climbing up the ladder, but nothing was on top of it, and we knocked on it, and we didn't think nothing was in there. It just sounded like a steel noise. Like if you was knockin on that thing over there and it sounded like that. And then we went back down there and then climbed up another tree, and then my dad climbed up of it, up it, and then I climbed higher and I found a ladder and did too, and I went up it and so did my dad. And we found a house up in a tree, a big house. And found some things in it. Didn't know what the things. When we came back home, and another day, my dad didn't know I was there, standing behind him, behind his work thing. Then I came out and I really scared him. Another day me and my dad went campin again. And we was goin to the frog patch and we found a garter snake. And Timmy was scare of it and he cried and then we throw rocks at the snake. We thought that snake was dead. And he woke up and he was alive. And then we started to throw rocks at him, _____ away. Then we went another time and Tim was afraid to go down there, but me and Jeff weren't. But we was kinda hurtin from the thorns, we slide in there. And then, I thought I found a frog hoppin on the tree, and then right up in the tree, down came a person. And then when we was comin there we found an army car. The army wasn't dressed, he had nothin on, and he was drivin the car somewhere. And then when we was comin back, on the left side we saw he crashed. And then in the weeds, when we went campin that, I sure, I had a bunch of these sticker things on my socks. Then we stopped, took them off, and then we went back and my dad asked me if I seed that thing, and I said yes. so we went there and then I said no, I didn't see that thing, I thought you was _____ something else. And then he said, why did you say that? And I say, then why did we come down here? And then he said to chop some wood. I know that.

63. Something else in my family. My grandma lives someplace out. Then we read. I got a record at home. I got a park family, its all dressed up. I got that.

64. My mom stays in the house watching football games. My dad works outside. My sister goes in her friends.
65. My brother's in _____ and Gordon's dead. And my mom's name Janet that's _____.
66. Well I don't know if I can tell you about my dad. My dad's working on our new house. So is my mom. My brother at first grade. And I'm at school.
67. Well we go places a lot of times, except school days. Well, every day we go to our grandma's house.
68. My daddy sick. But he's--he went to the doctor yesterday. He came home but he didn't play with us. My sister didn't wake up today. We got two kinds of cereal. Mix, I don't know. I think I found it the first time. We watched the circus last night. You know what they did? They did something funny. Didn't do nothing right. But I think they had clowns doing tricks last night. But they didn't. They did something and one of them went, they brought a big thing out and then a boy, a man went in it with a hat on and he came out, popped out and then he had his hat on fire and the clown setted on it. And it went up. Glad the circus didn't caught on fire and then have to call the fire department and then all the people had to _____. I didn't--something fun yesterday. You ought to be in Clark City cause you know what something did? They had a thing and it was a cage thing. And it was over by a pole. When I got _____. When I saw my buddy a comin, I stopped and went down. That can be a big _____ lot of troubles. They didn't have so much animals around. They didn't have. The funniest thing, you did see. The clown was something and fall on that thing and he jumped, he falled way way down. And that can be a biggest funny thing. But that thing is higher. I didn't like--cause he's funny. And I don't know what about, anything about him. That clown didn't do anything. He just jumped right out. You have to go under that and you head didn't get down. I'm not sure we ought to do that. Cause if something happened at the school we couldn't go. And then when they was on the _____, I got scared and scared and scared and scared. I don't know what, Friday, Monday, Tuesday, Wednesday. I think I gotta go to work Tuesday. Oh yeah. I go to school Tuesday, Monday, Wednesday, Friday. That's all I gotta go. I, guess what I did? Move a new toilet in, now we gotta new bath-tub, now its gonna be all done now, I hope.

69. I got--I only know their names but I don't know all about them. Well, they have black hair and my mommy has brown hair and the--live all around. Oh, there's this babysitter, that's why I'm glad I can go to school so she can work while I go to school. My dad works at the YMCA at the bus garage.
70. I'm selfish.
71. I like them. I like riding a big bike too. But I don't get one.
72. My mom always does some work in the house instead of sitting down and watch T.V., but at midnight she sits down and watches T.V. Always when its school time, sometimes our kids take their lunch to school. Only Tommy likes it, but I don't. You know why? Cause you get to tired and you're woken so long. Doesn't your kids take your lunch to school sometimes? How come? Your kids are just like Brian. Cause Brian doesn't take his to school. You know, his lunch to school. Cause, Nancy thinks everybody will laugh at him. Only when we take our lunch, nobody laughs at us, our kids. Only how's come they would laugh at Brian? Like, just like my mom, doesn't think. Nancy gets, always gets a longer time to play out then me, cause it will be dark out. And they can even play when its dark out. But the robbers might be out though. That wouldn't be fun, playing out when it's dark.
73. My brother Greg goes with my dad to work. And Jay always goes golfing every night. And every once _____ I have to go to ballet. And last time, last week, when I went, since I wasn't going to go any more, cause the year was over, I had to kiss my teacher. And there was another class up with us, called the Teddy Bears and we were the Ducks. And we have a hard time. You know what the Teddy Bears have to do? They have to somersault on a floor. I think that would hurt. It sure would hurt. I know that. I wouldn't want to do it any. I think that Duck dance is easier. You don't have to somersault. And do all that jazz. They have to do heel and stuff. First, they have to go in and out and this heel and that heel and then they have to hop back, like this. And then they have to somersault. Who made that flower over there? Jay still won't stop going golfing all the time, he's always late for supper. I don't wonder why, he at least go after supper. He should, some times. He always goes. At the wrong time, right before we eat, he takes off. And then, we barely then get a chance to feed him. And that gives us the hard time, we have to wait till Jay gets back home. Gives us a hard time, having to wait, me and Brian's starved a lot. And we always can't help it, cause of waiting till lunch time, supper really makes you get starved. And I can tell,

cause of, I can't even make it without a drink be--at, before supper. It's hard. Making it without taking a drink all day. And I can barely even walk when my legs get so tired of peddling my trike all around. Every morning I go over to get Amy. Cause there's no one else to play with but our kitten. Our yellow cat got out by our T.V. It can get out everytime Mama goes, the yellow gets out and tries to follow Mama, all around the house. The yellow one's only the biggest one that's why it can only get out of the box.

74. What's family? My mommy, my daddy, my sister and me.

75. (No response from this child; scale accordingly.)

APPENDIX III

SAMPLE ANSWER SHEET

Name _____ Sex _____ Ins tructor _____

_____ 1.	_____ 26.	_____ 51.
_____ 2.	_____ 27.	_____ 52.
_____ 3.	_____ 28.	_____ 53.
_____ 4.	_____ 29.	_____ 54.
_____ 5.	_____ 30.	_____ 55.

_____ 6.	_____ 31.	_____ 56.
_____ 7.	_____ 32.	_____ 57.
_____ 8.	_____ 33.	_____ 58.
_____ 9.	_____ 34.	_____ 59.
_____ 10.	_____ 35.	_____ 60.

_____ 11.	_____ 36.	_____ 61.
_____ 12.	_____ 37.	_____ 62.
_____ 13.	_____ 38.	_____ 63.
_____ 14.	_____ 39.	_____ 64.
_____ 15.	_____ 40.	_____ 65.

_____ 16.	_____ 41.	_____ 66.
_____ 17.	_____ 42.	_____ 67.
_____ 18.	_____ 43.	_____ 68.
_____ 19.	_____ 44.	_____ 69.
_____ 20.	_____ 45.	_____ 70.

_____ 21.	_____ 46.	_____ 71.
_____ 22.	_____ 47.	_____ 72.
_____ 23.	_____ 48.	_____ 73.
_____ 24.	_____ 49.	_____ 74.
_____ 25.	_____ 50.	_____ 75.

APPENDIX IV

MASTER TRAINING SCALE

Level 1 - Sample 1

No response.

Level 1 - Sample 2

No response.

Level 2 - Sample 1

I don't know.

Level 2 - Sample 2

Family.

Level 3 - Sample 1

I got a Grandma name Shields and name White and a Duke and my dog name Sue--Susie.

Level 3 - Sample 2

I don't got no family. I got a kitty cat and a doggie.

Level 4 - Sample 1

My mother is--she don't work anywhere, she just stays home most of the time. In the night, she goes bowling. Sometimes in the night, at the bowling alley near K-Mart, little bit close to K-Mart.

Level 4 - Sample 2

I got--I only know their names but I don't know all about them. Well, they have black hair and my mommy has brown hair and the--live all around. Oh, there's this babysitter, that's why I'm glad I can go to school so she can work while I go to school. My dad works at the YMCA at the bus garage.

Level 5 - Sample 1

I can't think what my mom's name is. My mother's Cathy. My dad's name is Joe and my sister's name is Stacy. My dog's name is Polly. I had some pups, but we didn't name our pups yet. Well, I can tell you about bulls. Have you ever seen a bull fight? Neither have I. Have you ever went to a circus and seen a bull? Neither have I.

Level 5 - Sample 2

You mean what they do? Well I--they--my mom puts me to bed at nine o'clock, cause I have to go to kindergarten every morning. And we got a colored T.V. and I watch it till nine. Last night, I was playing with my blocks and I built a church. And the other night I think, I builded three, well I build a whole town too. I think I builded three. The other day when I was at Warrensburg where we live, I was up at Kelly's, I think that's who it was, yeah, and our dog went out, and Randy was almost to get him and I was, and he was about to start to bite. He was over at Kelly's house and was about to bite me. I think it was Randy I don't remember. I told my dad, and he was going into the front yard. I told him Michele was almost to bite. He didn't bite anyway but we got him back in the fence. I think my dad was still mowing then but somebody must have got him in. I think he just came in cause I made him. And, we got him in. Our glider is milled, you know what milled means? Some of the greens in the white paint. The other day, is kind of a long time yet, our glider got broke. I sure get mad. This time I'm going to have to put a stop sign at my fence. And then I'll put a green sign that says go, go in. And then, I'll get a lot of cars when I grow up, I want to get three cars.

Level 6 - Sample 1

Their names? Did you ever see my mom? Do you know her name? I do. Freitas and my father's name is Floyd, just like mine. And my sister's name is Susie and Cindy and Sharon. And our house is yellow. And we got a white car. And the address is something, what I don't know, 57 Oil Drive.

Level 6 - Sample 2

Well, I have a little sister, she's two years old. She likes to do what I do. Everytime I do something. I draw on the chalkboard, she draws on it. I pull the door shut, she opens the door shut too. I turn off the light, turn it back on. She turns off the light, turn it back on. My sister's something. I never saw such a sister like that. My mom-- I--well, she usually takes us anywhere we wanna go. And know how I so brown? Cause I been out in the sun all summer long. Mom didn't. Mom didn't get too brown cause she had to do work inside. My dad, he works nights and sleeps in day times. After--probably after-- probably two hours later, the same day, he'll get up. And he'll help mom. He, I meant my dad, usually takes me anywhere he wa--anywhere we wanted to go. My mom, she doesn't, I meant, she doesn't let us go mostly anywhere we wanna go.

APPENDIX V

ADDITIONAL PRACTICE ITEMS

My daddy got a job at _____. "

I have a _____. We go to our grandma's and stuff. And we eat supper and stuff. And a--we get candy and stuff. That's it. That's all we do.

My family--and--I got--my family--bunch of times. I dream about this. My sister had a baby. She did. I didn't know and she and she, and I thought she had a dad and she didn't and she and I thought she pregnant. And her baby real. And he'll pull your hair, out here. And then he can cry either. And if somebody hit him, my sister said, not the sister pregnant, my sister, my little sister, she said she gonna beat her butt. And then she said she don't want anybody know that _____, and that's all.

My daddy works at Caterpillar and my mommy works at home. I don't do nothing, but play outside.

You mean like my family names? My mom's name Daisy. My dad's name, I don't know what my dad's name, but my brother's name Robbie. My name's Angela Sue Crowe.

When they come over here, they play with me. All of 'em. The mother hollar about 'em, they come. And--but other ones come, their mom hollar about 'em, and, they comes, they come and they say _____ and I let them play with my toys.

Well, I got a sister. And she's, I think she's one or two, I don't know. My dad goes to Caterpillar and he works at store too. And my mom goes--

my mama--mommy makes spaghetti sometimes for me. And sometimes my mommy lets my sister get up and play with my toys, sometimes. And sometimes, sometimes when people go by, they see the pumpkin I make at school. And my dad, sometimes, mows the gr--, know I mean, sometimes, I think he cuts the ledge on the--the--the ledge on the--around--our--around our house. You know what else my mom does? She takes my sister and she picks her out of bed and she just lets her play. That's all I can think.

Well, we use to go to Tennessee. We used to stay there. We use to, I used to go too. Ron use to live there. My dad gets a brother, name Junior. I wanna talk about some tornadoes. They--they winds.

My--they love me. And my father Ken. And my brother likes me. And when I come home from school, he kisses me. And he wants some paper. And he wants my paper I bring home from school, but he can't.

You mean my cousins? Family? O.K. It's Monda, Susie, and Pam. Janet and April and that's all.

Like what? Well, my dad, I don't know what he does, but when he goes everywhere and don't let me go I want to go with him, camping, churches. He buys me stuff. Like one time, he bought me a little black mouse with white eyes and then you pull it up and then the bottom goes up. Like that. My mom, well she's making mouses. Me and my dad make football and I kick it real high. Well then, then I, then my dad goes in then watches the news and then when the news is all over I tell him to come back out and play football with me and so he does. And then he plays with me. And then at night he wrestles with me and then he _____. The other day when I tell him to come out and play football with me he does.

We has some Butch and JoAnn. We can have Missy and Debbie and Curtie. We have Cindy and we have Debbie and Carl. You know what our mommy and daddy's name is? Ronnie Shinall and Elaine Shinall.

What about my family? Well, I don't know anything to tell about my family.

I don't know.

Well, you see, my sister isn't in school yet. And she gets all my things out. She--my--she's on Arizona Drive in a red house right now. And I think she is playing or she might be outside trying to climb a tree. Maybe the Pussy Willow tree. Oh, I see some _____ in your mirror. _____ in your mirror and a picture in your mirror.

My mommy, you mean my mommy's name? Mrs. Lewis. My dad's name is Chuck. My name is Chris, my dog's name Spot. I got no cats.

One time, I can't remember--the wrong way, when we came home. It was about--it was real dark when we got there, and then when we came back, it was a real long time. They gave us a picture of when we was a walking. And then, there was a sign, a real big sign up there, and with this man had a horn, a real big horn about that long, and he had, like something, like a magic hand, and he had red inside that jacket. And behind the sign we saw a man walking, just with his socks on. Even if it was raining down there where we were, we still could go swimming. We went to go back again and after that we came home. But before that we went somewhere. And then I had a apple. But when we went apple picking, my mom and dad had a apple. And then, one time when we went camping, we went down at my aunt's house. And we went over to Granpa Hale's and I climbed up a sideways tree, and then, when I was comin down, then I was holding on to the tree, and it fell to another tree. And shoe came off. And I dropped, when I was coming close to the tree. And then, that someone else, we went where there was this pole and I mean it wasn't no pole, it was a tree with no, with not any branches on it, with not any leaves on it. And then, there was one with some branches on it, with not any leaves on it. And we went down there, but those were already chopped down. And we went somewhere else, and doing, my dad found clump of _____, I think, which goes behind his tractor. And--but when we was comin there we saw this thing, and we wondered what was in it, so went climbing up the ladder, but nothing was on top of it, and we knocked on it, and we didn't think nothing was in there. It just sounded like a steel noise. Like if you was knockin on that thing over there and it sounded like that. And then we went back down there and then climbed up another tree, and then my dad climbed up of it, up it, and then I climbed higher and I found a ladder and did too, and I went up it and so did my dad. And we found a house up in a tree, a big house. And found some things in it. Didn't know what the things. When we came back home, and another day, my dad didn't know I was there, standing behind him, behind his work thing. Then I came out and I really scared him. Another day me and my dad went campin again. And we was goin to the frog patch and we found a garter snake. And Timmy was scare of it and he cried and then we throw rocks at the snake. We thought that snake was dead. And he

woke up and he was alive. And then we started to throw rock at him _____ away. Then we went another time and Tim was afraid to go down there, but me and Jeff weren't. But we was kinda hurtin from the thorns, we slide in there. And then, I thought I found a frog hoppin on the tree, and then right up in the tree, down came a person. And then when we was comin there we found an army car. The army wasn't dressed, he had nothin on, and he was drivin the car somewhere. And then in the weeds, when we went campin that other time, I sure, I had a bunch of these sticker things on my socks. Then we stopped, took them off, and then we went back and my dad asked me if I seed that thing, and I said yes, so we went there and then I said no, I didn't see that thing, I thought you was _____ something else. And then he said, why did you say that? And I say, then why did we come down here? And then he said to chop some wood. I know that.

My mom always does some work in the house instead of sitting down and watch T.V., but at midnight she sits down and watches T.V. Always when its school time, sometimes our kids take their lunch to school. Only Tommy likes it, but I don't. You know why? Cause you get too tired and you're woken so long. Doesn't your kids take your lunch to school sometimes? How come? Your kids are just like Brian. Cause Brian doesn't take his to school. You know, his lunch to school. Cause, Nancy thinks everybody will laugh at him. Only when we take our lunch, nobody laughs at us, our kids. Only how's come they would laugh at Brian? Like, just like my mom, doesn't think. Nancy gets, always gets a longer time to play out than me, cause it will be dark out. And they can even play when it's dark out. But the robbers might be out though. That wouldn't be fun, playing out when it's dark.

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the wrong time, right before we eat, he takes off. And then, we barely then get a chance to feed him. And that gives us the hard time, we have to wait till Jay gets back home. Gives us a hard time, having to wait, me and Brian's starved a lot. And we always can't help it, cause of waiting till lunch time, supper really makes you get starved. And I can tell, cause of, I can't even make it without a drink be--at, before supper. It's hard. Making it without taking a drink all day. And I can barely even walk when my legs get so tired of peddling my trike all around. Every morning I go over to get Amy. Cause there's no one else to play with but our kitten. Our yellow cat got out by our T.V. It can get out everytime Mama goes, the yellow gets out and tries to follow Mama, all around the house. The yellow one's only the biggest one that's why it can only get out of the box.

What's family? My mommy, my daddy, my sister and me.

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