2-7-1989

# Correlation of Preschoolers' Performance on Three Language Comprehension Tests

Alissa Clare Nordlund
*Portland State University*

AN ABSTRACT OF THE THESIS OF Alissa Clare Nordlund for the Master of Science in Speech Communication presented February 7, 1989.

Title: Correlation of Preschoolers' Performance on Three Language Comprehension Tests.

APPROVED BY THE MEMBERS OF THE THESIS COMMITTEE:

[redacted]

Mary E. Gordon, Chair

[redacted]

Mary T. Withers

[redacted]

Maxine Thomas

The purpose of this study was to determine the relationship between the Peabody Picture Vocabulary Test-Revised, (PPVT-R) and receptive subtest of the Preschool Language Scale (PLS), and between the PPVT-R and the Test of Auditory Comprehension of Language-Revised (TACL-R), as well as determine how the tests compare in identifying children in need of further evaluation in the area of receptive language. The reasoning behind the goal of this study was to determine that if the three tests showed a strong, positive correlation

and identified the same children as needing further assessment, then perhaps the test which was easier and shorter to administer (the PPVT-R) could be used with more confidence as a quick, reliable screening tool of overall receptive language ability. In other words, if a child does poorly on the PPVT-R, one could assume that the child would most likely score below average on the other two tests also. Based on the results of this study, one cannot make this assumption.

The subjects in this study included 10 males and 15 females. All were preschool students, ranging in age from 4-1 to 4-11 with a mean age of 4-6 years. The subjects were given three tests in counterbalanced order. The mean age equivalents and standard scores were determined for all three tests and percentiles were determined for the PPVT-R and TACL-R.

The Pearson product moment correlation coefficient (Pearson $r$) was used to determine the degree of relatedness among the tests. A moderate positive correlation of .41 was found between the PPVT-R and PLS, and a low positive correlation of .27 was found between the PPVT-R and TACL-R. Shared variance ($r^2$) was 17% between the PPVT-R and PLS and 7% between the PPVT-R and the TACL-R.

In determining how the tests identify children needing further evaluation of receptive language skills, cut-off criteria of total age equivalent 2 years and 1 year below chronological age, as well as percentile scores below the 20th and 10th percentile (for the PPVT-R and TACL-R) were

used. The results indicated that only 2 of the 25 children in this study showed need for further evaluation. These were identified by the TACL-R, but not by the PPVT-R or PLS. These results seem to indicate that, based on these study results alone, one cannot use the results of any one of the tests administered as a predictor of another. However, these results may have been affected by the sample used for this study. Higher correlations and identification of more children needing further evaluation could result from use of a different, larger sample due to a greater chance that a "true" mean performance would occur given a larger, more diverse sample population.

# CORRELATION OF PRESCHOOLERS' PERFORMANCE ON THREE LANGUAGE COMPREHENSION TESTS

by

ALISSA CLARE NORDLUND

A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE
in
SPEECH COMMUNICATION

Portland State University

1989

TO THE OFFICE OF GRADUATE STUDIES:

The members of the Committee approve the thesis of Alissa Clare Nordlund presented February 7, 1989.

[redacted]

Mary E. Gordon, Chair

[redacted]

Mary T. Withers

[redacted]

Maxine Thomas

APPROVED:

[redacted]

Theodore G. Grove, Head, Department of Speech Communication

[redacted]

Bernard Ross, Vice Provost for Graduate Studies

ACKNOWLEDGMENTS

I am grateful to many people who have made the long process of writing a thesis a more enjoyable experience. I could never have arrived at this point without the guidance and generosity of my thesis advisor, Mary Gordon. Her encouragement and confidence in me when I felt little confidence in myself are greatly appreciated.

I would like to thank my parents and my sister Lynn for their constant love, patience, and faith in my ability to complete what I started. They have always been there for me and I feel very fortunate to have them in my life.

I could not write acknowledgments without thanking my good friends Colleen Lacter and Robin Orr for just "being there" when I needed someone to talk to; and a special thanks to Janet and David Miner for their enthusiasm and their help with the statistics!

Finally, I would like to dedicate this thesis to Russell, who listened patiently to my complaints regarding "it" and who never stopped reminding me not to take it all so seriously. His love and support made it all easier.

TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

FIGURE PAGE

# CHAPTER I

## INTRODUCTION AND STATEMENT OF PURPOSE

### INTRODUCTION

Many children with language deficiencies can be helped if they are identified early and intervention is initiated. This need for early identification is reflected by Mecham, Jex, and Jones (1973):

> The great need for early detection of language disabilities has been stressed by many specialists. Evidence available strongly suggests the existence of a "sensitivity period" for language facilitation, before which it is practically impossible to teach oral- or audio-language and after which acquisition becomes increasingly more difficult with advancement of age. The best time for optimal dividends in language remediation is between 4 and 8 years of age and the earlier the period the better (p. 65).

Illerbrun, Haines, and Greenough (1985) noted that the primary purpose of identifying young children who exhibit language difficulties is to instigate treatment aimed at preventing frustration and possible academic failure in later grades.

Research by Aram and Nation (1980) and Tomblin and Hall (1978) shows that language disabled children have later scholastic, vocational, and social difficulties. Aram and Nation conducted a follow-up study of 63 language disabled children and found that 4 to 5 years after identification, 40% of these children were not in regular classrooms and

were having difficulties in math and reading, as well as exhibiting speech and language problems.

Similarly, in a study of language and articulation disorders conducted by Tomblin and Hall (1978) it was found that the language disabled children had more difficulties with communication and academics. Additionally their choices in post-secondary education were different from the articulation disordered children. These language disordered children did not "outgrow" the difficulties. These results support the contention that early identification of the child who is deficient in language skills would greatly aid the remediation process and offset the difficulties that will arise in the future.

During the preschool years, normal children make rapid and large gains in their language development. Fluharty (1974) emphasizes the need for early identification of speech and language problems and the limitations of preschool screening procedures by noting:

> In recent years there has been a general recognition of the importance of early identification of speech and language problems. Developmental studies have shown that a child acquires the basic rules governing speech and language production during his preschool years. Greater emphasis is being placed on extending routine screening procedures to include preschool children. Large-scale screening projects are strictly limited in the time they can allow for each child (p. 76).

Dodge (1980) also expressed concern regarding the time constraints involved in screening large numbers of preschoolers. He noted that more time spent screening children

will result in a reduction of the hours necessary for further assessment, intervention, and consultation services.

Accordingly, it seems logical that preschool language screening procedures and instruments should be quick to administer, as well as be valid indicators of speech and language problems. Early identification would enable earlier intervention which may make a greater impact in avoiding future difficulties than if the child is identified later in the school years. The large size of many preschool classes makes clear the ever-present need to reduce screening time for clinicians; rapid screening is essential if intervention is to be instituted quickly. Rapid identification of children needing further language assessment may be hindered by language screening tests that are too limited in scope, time-consuming, or too complicated to be feasible for screening purposes. It could be beneficial to identify a language screening test which is short, easy to administer and score, and which can validly help identify "at risk" children.

One widely used test for screening receptive language ability is the Peabody Picture Vocabulary Test-Revised (PPVT-R) devised by Dunn and Dunn (1981). It is a standardized test of receptive vocabulary which can be administered in approximately 10 minutes. If this measure correlates with more complicated tests of receptive language development such as the Test of Auditory Comprehension of Language-Revised (TACL-R) (Carrow-Woolfolk, 1985) and the Preschool Language Scale (PLS) (Zimmerman, Steiner, and Pond, 1979), could it

possibly be used in lieu of these tests as a quicker, simpler screening tool? This study sought to examine this question.

## STATEMENT OF PURPOSE

The purpose of this investigation was to compare the test results on the PPVT-R with the responses on the TACL-R and the receptive subsection of the PLS. More specifically, this study sought to determine how the PPVT-R correlates with the TACL-R and with the PLS when given to 4-year-olds and how selected screening cut-off scores compare among the three tests. The specific questions this investigation sought to answer were:

1. What is the relationship of the performances of preschool children between the PPVT-R and the TACL-R and between the PPVT-R and the receptive portion of the PLS?
2. How do the three tests compare in identifying preschool children who demonstrate a need for further evaluation of comprehensive abilities?

# CHAPTER II

## REVIEW OF THE LITERATURE

### IMPORTANCE OF EARLY CHILDHOOD LANGUAGE SCREENING

Kindergarten screening programs are a priority with many school districts attempting to identify at-risk children at an early age. Presently, many school systems are attempting to screen kindergarten children with standardized, valid test instruments rather than other procedures such as teacher referral. Mecham, Jex, and Jones (1973) also noted this change from teacher referrals to large screening programs. The purpose of screening includes avoidance of in-depth testing of "normal" children and quick identification of children who are at risk of having speech and/or language disabilities. Current screening limitations include limited time allowed per child, and a lack of quick, standardized screening tests.

In 1974, Fluharty noted there was a general trend toward early identification of language problems and that large preschool screening projects were established. She noted that studies indicated children gain their basic knowledge of the rule system governing language during the preschool years. Presently, the federal government is recommending routine preschool screening projects, but there is a very limited

amount of time which can be spent for each individual child. Fluharty asserted that many present screening tools lack normative data, are extremely limited in scope, or are prohibitive because of the time which administration and scoring takes in relationship to the large numbers of children being screened. These screening test limitations can severely impair the early identification and subsequent remediation of language deficient children. Mecham, Jex, and Jones (1973) stated that screening is important in order to identify as early as possible those children requiring further assessment in the areas of speech and language. They contended that the value in screening is that it can differentiate children in a "problem-no-problem" dichotomy, thus preventing unnecessary in-depth testing of "normal" children.

Illerbrun, Haines, and Greenough (1985) stated that the main purpose of early childhood language screening programs is to identify early those children who would benefit from language intervention. They and others have done considerable research supporting the view that language difficulties can lead to frustration and academic failure, as well as vocational and social problems later in life.

Aram, Ekleman, and Nation (1984) studied 20 preschoolers who were identified as language disordered 10 years after initial identification. They wanted to determine what happens to children who are identified early as language disabled in terms of intelligence, academic achievement, and social adjustment. The results of their study showed that the

20 language disabled preschoolers, now adolescents, continued to exhibit wide-ranging educational and social difficulties. Of the adolescents studied, 5 were in regular classrooms, 7 were in regular classrooms with tutoring or had repeated one grade, 4 were in self-contained classrooms for the learning disabled for at least three years, and 4 were in Educable Mentally Retarded (EMR) classrooms. They were also rated as significantly less appropriately socially adjusted in the areas of school activities, social involvement, and school performance. The earlier studies by Aram and Nation (1980) and Tomblin and Hall (1978) substantiate the above results.

King, Jones, and Lasky (1982) studied 50 adolescents who had attended a preschool for language disordered children. These children had communication difficulties including no speech, language disordered/speech delayed, articulation problems, and language disorder/articulation problems. They found that 42% still had some communication difficulty, 22% had motor problems, 76% had B or C grades or better, 52% had some sort of academic help, and 8% had social difficulties. Students showing language disorder/speech delay were most often the children receiving C grades or below. The overall results of the King, Jones, and Lasky study support the idea that many children do not outgrow early language and/or speech deficiencies. These studies failed to note whether or not language intervention was included throughout later school grades and whether or not continued intervention may have offset later difficulties.

In order to begin early intervention in a timely manner, the disordered children must be identified. Currently, there exist many screening tests which are designed to identify children who may be language disordered. Four of these tests will be discussed below.

## SCREENING INSTRUMENTATION

Some screening tests being used today are composites put together by individual speech-language clinicians while others are published, standardized measurement instruments. Examples of the latter type will be briefly described below.

The Michigan Picture Language Inventory (Wolski, 1962) assesses syntactic structures both receptively and expressively and is standardized for children from 4-0 to 6-0 years. Phonology and semantics are not evaluated.

The Denver Developmental Screening Test (Frankenburg, Dodds, and Fandal, 1970) uses pictures and objects to elicit verbal responses from the child. An estimate of the child's language competency is made based upon the number of age-appropriate responses given by the child.

Another instrument is the Northwestern Syntax Screening Test (Lee, 1969). This test was formulated to screen out those children aged 4-0 to 6-0 who need further receptive and expressive language evaluation. The test takes 15-20 minutes to administer.

The Bankson Language Screening Test (Bankson, 1977) is a "broad based" expressive language screening test which

assesses such areas of language as semantics, grammatical rules, and auditory perception. It takes approximately 25 minutes to administer.

The screening tests presented here are by no means representative of the myriad screening instruments available, but they do give an overview of what many tests offer and some of the drawbacks of these tests. They are often too long or complicated to be appropriate or feasible for the test administrator.

A test used frequently to evaluate language ability in children is the PPVT-R (Dunn and Dunn, 1981). It is a revised version of the original PPTV (Dunn, 1959). The purpose of both the original and revised PPVT is to test the receptive vocabulary of the subject. It is appropriate for persons aged 2-6 to 40-0 years. There have been numerous changes in the revised version of the PPVT which will be discussed presently.

## PEABODY PICTURE VOCABULARY TEST-REVISED

### PPVT-R Versus the PPTV

Some of the significant differences between the PPVT and the PPVT-R include:

1. The PPVT-R was standardized using a larger, nationally representative standardization sample (4,200 children aged 2-5 to 18-0, and 828 adults).

2. The PPVT I.Q. and mental ages were replaced with the PPVT-R's standard score equivalents and age equivalents.

3. The PPVT-R contains 175 items per test form as opposed to 150 for the PPVT.

4. Forms L and M of the PPVT-R were calibrated using item analysis to insure equal numbers of difficult items in both test forms.

5. There are fewer stereotypic depictions of females and minorities in picture plates in the PPVT-R (Hollinger and Sarvis, 1984; McCallum, 1985; Naglieri and Naglieri, 1981).

Further research concerning the revision of the PPVT was completed by Choong and McMahon (1983). They noted that the PPVT was criticized prior to its revision for three main reasons: (1) insufficient standardization procedures, (2) use of I.Q. scores, and (3) less applicability to today's children who appear to have improved language skills. Choong and McMahon's study compared age equivalency values obtained from the PPVT and PPVT-R for a given age group. They tested 80 randomly selected children aged 3-5 to 4-5, who were divided into four groups. The children in each group were given one form of the PPVT and one form of the PPVT-R. They found the mean score of the PPVT to be higher than the mean PPVT-R age equivalent value. Pearson product moment correlations showed moderate to moderately strong correlations between age equivalent values of the four groups used in the study. The results of the Choong and McMahon study showed a significant difference in the mean age equivalent values of the two tests (when forms A and B and L and M were combined, as well as within the four groups of

children). The mean age equivalent difference between the PPVT and PPVT-R was 9 months with the PPVT resulting in the higher score. When examining the four subgroups, the mean age equivalence of the PPVT was 10 months (form A) and 12 months (form B) higher than the chronological ages of the children used in the study. The mean age equivalents of the PPVT-R was 1 month (form L) and 3 months (form M) higher than the child's chronological age (much closer to their actual ages).

Dunn and Dunn (1981) noted the differences in scores between the two test versions. They stated that changes between them occurred for four main reasons: (1) changes in the "set up" of the test items, (2) changes in the standardization procedure, (3) possible improvement in children's receptive vocabularies since the original PPVT standardization, and (4) 25 newly added test items. This change, i.e., age equivalents being closer to the child's actual age in the revised test, should give the clinician more confidence in using the PPVT-R as a quick, reliable test of receptive language skill.

## Statistical Analysis of the PPVT-R

In a test review of the PPVT-R, Wiig (1985) presented Dunn and Dunn's approach to evaluating internal consistency. They used a split-half approach on all standardization subjects; the correlation for this ranged from .67 to .86 (form M) for children below the age of 19-0, showing

acceptable to high internal consistency. The degree of equivalence between forms L and M was determined using a subgroup of 642 children. It ranged from .73 to .91 (median = .82), which was an improvement over the PPVT's median of equivalence of .77. Test-retest reliability of 962 children tested within 9 to 31 days between test administrations was found to range from .52 to .90 with a median of .78. Standard score correlations of .54 to .90 (median = .77) demonstrate an adequate test-retest reliability over a short period of time.

Wiig (1985) noted that test validity was established using content, construct, and concurrent validity studies. Content validity was shown by carefully selected vocabulary based on age and grade level. Construct validity was supported by the gradual increase in age in the percentage of subjects correctly choosing a given test item and by item analysis. Concurrent validity, when compared with PPVT-R, ranged from .53 to .87 (median = .72), which indicates adequate to high validity.

## PPVT-R and Measures of Intelligence

Naglieri (1981) noted that the original PPVT, published in 1959, showed significant correlations with the "verbal" sections of intelligence tests such as the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974) and Stanford-Binet (Hagen and Sattler, 1986) for school age children. Naglieri's study went on to explore the relationship among the PPVT-R, the Peabody Individual Achievement Test

(PIAT), (Dunn and Markqwardt, 1970), and the McCarthy Scales of Children's Abilities (McCarthy, 1972)), which is a measure of intellectual functioning. Twenty-six children (K, 1, 2) were randomly selected and administered the PIAT and the McCarthy Scales in counterbalanced order. Six weeks later, the PPVT-R (form M) was given. Using a Pearson product moment correlation, Naglieri found significant correlations between the PPVT-R and the PIAT standard scores in all but the mathematics subtests. The PIAT mean total test standard score was 114.6, the PPVT-R mean standard score was 104.5, and the correlation coefficient was .53. When compared to the McCarthy, a significant correlation was found with verbal, quantitative, memory, and general cognitive index subtests of the McCarthy Scales. The median correlation was .76, with the mean test standard scores of the PPVT-R and the McCarthy Scales being 104.4 and 104.5 respectively.

As reported above, the PPVT-R showed significant correlations with overall achievement tests as measured by the PIAT and the intelligence-measuring McCarthy Scales. However, the PPVT-R standard score equivalent was more similar to the McCarthy General Cognitive Index (GCI) and was generally less than the mean of the PIAT total test standard score.

Bracken and Prasse (1983) expanded upon the Naglieri (1981) study by counterbalancing test administration, as well as by including both forms of the PPVT-R. Thirty-five preschoolers with a mean age of 4-3 years were used in the

study. All were either born prematurely or had birth complications. The researchers found significant correlations between the mean standard scores of both forms of the PPVT-R and the McCarthy GCI. The two forms of the PPVT-R were each separately correlated with the McCarthy verbal, perceptual performance, and quantitative subtests, as well as the GCI. There were significant moderate correlations between the tests, ranging from .41 to .69. Whereas Naglieri found the greatest correlations between the tests to be with verbally-loaded portions of the test, Bracken and Prasse found moderate correlations between the PPVT-R and all subtests of the McCarthy.

The correlations found by Naglieri (1981) and Bracken and Prasse (1983) support the contention that the PPVT-R shares some underlying verbal ability that is evaluated in various subtests of the PIAT and the McCarthy Scales. The PPVT-R correlated significantly and positively with subtests of these two measures. Naglieri's data show significant positive correlations when there is some verbal component present, whereas Bracken and Prasse's data show an overall correlation between the PPVT-R and all of the McCarthy components. Naglieri stresses that these significant correlations do not indicate the interchangeability of the measures because important aspects of nonverbal intelligence are not evaluated by the PPVT-R. He notes that the PPVT-R is most appropriate when used as a measure of verbal intelligence. Bracken and Prasse agree that although the tests show certain

comparable scores, they are obviously measuring in different ways, with the McCarthy evaluating a wide range of skills and the PPVT-R measuring receptive vocabulary.

Two groups of researchers, Hollinger and Sarvis (1984) and Worthing, Phye, and Nunn (1984) compared the results of the PPVT-R and WISC-R. Hollinger and Sarvis administered the WISC-R and the PPVT-R to 51 elementary and middle school children. They found positive significant correlations between the PPVT-R and the verbal comprehension subscales of the WISC-R (4 out of 6 verbal subtests are verbal comprehension measures, i.e., information, similarities, comprehension, and vocabulary). They found that the verbal comprehension subtests correlated more strongly with the PPVT-R than with the overall verbal score (which includes all the verbal comprehension measures, as well as arithmetic and digit span). They note that the results support the use of the PPVT-R as a measure of verbal ability, but not as any overall measure of intelligence.

Worthing, Phye, and Nunn (1984) administered both tests to 101 children already in special education or referred for difficulties. They wanted to determine concurrent validity as well as to determine if the PPVT-R could be used with confidence as a screening tool for verbal intelligence for this population. Concurrent validity was found to be moderate, ranging from .53 to .68. Form L showed an overall greater correlation with the WISC-R than form M, although

no significant difference was found between the mean scores of forms L and M.

## THE PRESCHOOL LANGUAGE SCALE

The PLS is a language test which evaluates both verbal and auditory development in children aged 1-6 and 7-0. The test is composed of nine sections arranged developmentally, i.e., the test becomes increasingly difficult as the child progresses. There are a total of 80 test items and the test takes approximately 25 minutes to administer. The present revision of the PLS was published in 1979 by Zimmerman, Steiner, and Pond.

The authors assessed the reliability of the PLS with a split-half reliability coefficient, using children in two consecutive year-long Head Start programs. They found the correlations to range from .75 to .92 with a median of .88.

Validity studies reported in the test manual include content, concurrent, and predictive validity assessment. The authors note that content validity is shown by increasing the item difficulty with increasing age and is reflected by increased score with increased age which the authors found to be true in their studies with Head Start and preschool children.

Concurrent validity studies given in the PLS manual showed the PLS to correlate with the following tests of language: (1) .70 with the Utah Test of Language Development when both tests were administered in their entirety (in a

study by Scott, 1973), (2) .26 with the PPVT when correlated with the auditory subtest of the PLS (in a study by Ward, 1970), and (3) .42 with the PPVT also when correlated with the auditory section of the PLS (in a study by Roston, 1977) of possible learning disabled children. In a study by Zimmerman and Steiner (1970) conducted with Head Start children, the auditory subtest of the PLS and the PPVT were given to 3 consecutive years of Head Start classes at the beginning and ending of the school year. The correlation at the beginning of the school year was .58; by year-end it was .36. No explanation for this drop was given by the authors.

Predictive validity was examined by a study in which the PLS-revised was given to a group of entering Head Start children; two years later they were given the Lee Clark Reading Readiness Test. The PLS identified 79% of the children when the scores of both tests were separated as "average or above" and "below average." Only 7% who scored average or above on the PLS later scored below average on the Lee Clark; for the PPVT-R, this number was 12% (Zimmerman and Steiner, 1970).

Berryman (1983) studied the results of administration of the PLS to 672 preschoolers ranging in age from 3-8 to 5-4. They sought to determine if the items of the PLS are truly ordered in a developmental manner of increasing difficulty and if one can validly compare the child's "verbal ability" and "auditory comprehension" subsections, i.e., if the two subsections are tapping comparable language

abilities. The author determined that only 5 of the 80 test items were possibly at too high or low an age level to be appropriate; the children consistently passed or failed these 5 items. In comparing the two subsections of the test, Berryman found the correlation to be .72, a moderately high correlation.

McLoughlin and Gullo (1984) sought to determine the concurrent validity between two screening-type measures which included the Test of Early Language Development (TELD) (Hresko, Reid, and Hammill, 1981) and the PPVT-R with one subskill diagnostic measure (PLS). They chose the PLS because of its current wide usage, its recent revision, and the contention that it provides a global language score. The PLS also enables comparison of a child's receptive and expressive language performance. The three tests were administered in three sessions to 25 white, nonreferred children in counterbalanced order. They found significant differences between the PLS and PPVT-R and the PLS and TELD, with no significant differences found between the mean scaled scores of the TELD and PPVT-R (both groups of children scored significantly higher on the PLS). Pearson product moment correlations were determined between the mean scaled scores of the PPVT-R, TELD, and PLS (including the Auditory Comprehension and Verbal Ability subtests). All correlations found were significant, ranging from .42 to .93. The authors note that these results show a "high multicolinearity" among the tests.

In his study, Dodge (1980) noted the concern of administrators with the time it takes to screen preschoolers for language difficulties. He compared the effectiveness of the language subtests of the Denver Developmental Screening Test (Frankenburg, Dodds, and Fandal, 1970) with the PLS in identifying preschool children needing further language evaluation. Of 40 children, the PLS had no false negatives (identification as "not at risk" when "at risk") and 11 false positives (identification as "at risk" when "not at risk"). It identified 75% of the language deficient children who later were found to be eligible for language services.

## TEST OF AUDITORY COMPREHENSION OF LANGUAGE

The TACL (Carrow, 1973) is a test which measures understanding of various language structures such as grammatical and morphological forms as well as comprehension of nouns, verbs, adjectives, adverbs, and prepositions. The test is composed of 101 items and takes approximately 15 minutes to administer. It was first published in 1973 (Carrow).

Musselwhite (1973) describes the TACL as a widely used test of receptive language which is effective in differentiating between children with normal and disordered receptive language. In support of Musselwhite's contention that the TACL differentiates children with and without language deficiencies, Carrow and Lynch (1973) found a statistically significant difference between the performances of deaf

children and those of children with articulation and language deficiencies. Weiner (1972) and Carrow and Lynch (1973) found a statistically significant difference between dysphasic and normal children's performance on the TACL and Marquardt and Saxman (1972) noted a performance difference between children who had articulation disorders and those who did not. This differentiation between defective and normal language capabilities can aid in further and more in-depth testing decisions.

The revised edition of the TACL was published in 1985 by Carrow-Woolfolk. According to the TACL-R manual, the test was changed in numerous ways, but the main revisions occurred in the general format of the test, standardization (including improved geographic representation and socioeconomic status of the sample), improvement in the test manual and record form, and an increased level of test difficulty by addition of a section to assess complex sentence construction. Normative data on children ages 9-0 to 11-0 were also added.

Information supporting the reliability and validity of the TACL-R is presented in the test manual. Since the TACL-R was published so recently (1985), there are still limited studies on the reliability and validity of this new version of the test. A concurrent validity study conducted by Sommers, Erdige, and Peterson (1978) was presented in the TACL-R manual which compared the original TACL with the Northwestern Syntax Screening Test (NSST) (Lee, 1969) and the original PPVT (Dunn, 1959). The three tests were given to

122 children with "minimal brain dysfunction." A correlation of .74 was found between the TACL and the PPVT and a correlation of .78 was found between the TACL and the receptive portion of the NSST. Based on the significant positive correlations between the three tests, one can have confidence in assuming that the tests are tapping some similar underlying aspects of language. It will be of interest to determine how closely the standard scores of the revised versions of the PPVT and TACL correlate.

# CHAPTER III

# METHODS

## SUBJECTS

Twenty-five children (15 girls and 10 boys) enrolled in Portland, Oregon area preschools were chosen for this study. They ranged in age from 4-1 to 4-11 years, with a mean age of 4-6 years. The children were assumed to be of normal intelligence based upon teacher report.

## CRITERIA FOR SELECTION

In order for a child to be included in the study, the following criteria were met:

1. The child's parent signed a form giving permission for the child to take part in the study (Appendix A).

2. The child was able to respond appropriately to the items on the PPVT-R, TACL-R, and receptive portion of the PLS.

3. The child passed a unilateral puretone audiometric screening test at 20 db for the frequencies of 500, 1000, 2000, and 4000 Hz.

## INSTRUMENTATION

A portable Belltone audiometer was used for hearing screening purposes.

The PPVT-R (Dunn and Dunn, 1981) is a test of receptive (hearing) vocabulary. It is comprised of 175 picture plates and comes in two forms, L and M. Each plate contains four pictures. The subject points to the picture of the word presented by the tester. It has been standardized for subjects between the ages of 2-6 and 40-0 years. The test is not a timed test and takes approximately 10 minutes to administer.

The PLS (Zimmerman, Steiner, and Pond, 1979) is a test of both receptive and expressive language and is divided into two portions, i.e., auditory comprehension and verbal ability. As noted in the first chapter, only the auditory comprehension subsection was utilized in this study. The test is organized in a developmental hierarchy and is appropriate for ages 1-6 through 7-0 years. The auditory comprehension subsection is used to assess the understanding of various word meanings, concept acquisition, grammar, and stages of thought such as concrete thinking. No verbal responses are required; the child either points or demonstrates an action. It takes approximately 20 minutes to administer.

The TACL-R (Carrow-Woolfolk, 1985) is a test of receptive language which measures ". . . in depth the auditory comprehension of linguistic structure by children (p. 6)." This includes such linguistic parameters as word meaning, morphological structures, and syntax. It has been standardized for children aged 3-0 to 9-11 years and consists of 120 plates arranged in developmental order. Each plate consists

of three pictures; the child points to the picture of the word or sentence presented by the administrator. Administration time is approximately 15 minutes.

## TESTING ENVIRONMENT

All testing environments were quiet, well-lit rooms away from excessive outside noise and other people. The children were brought from their classrooms, one at a time, to be tested and were seated at a table to the left of the examiner with the stimulus between the examiner and the student.

## PROCEDURES

### Criteria Testing

The hearing screening was administered to potential subjects who met the first criterion. The child's right ear was tested initially, with the left ear being tested only if the screening in the right ear was not passed. The children who passed the hearing screening were considered further for inclusion in the study.

Before starting formal testing using the PPVT-R, TACL-R, and auditory comprehension portion of the PLS, practice items were given to the child, according to test manual instructions. The children who correctly completed the practice tasks were included as subjects in the study.

Test Administration

During test administration, the examiner sat to the right of the subject for ease of scoring with the stimulus material between the subject and the examiner. Verbal reinforcements such as "good listening" were used on an intermittent schedule. The tests were all administered and scored according to respective instruction manuals.

In administration of the PPVT-R, the examiner gave directions verbatim, as presented in the testing manual for children under the age of 8-0 years. A basal of 8 correct responses was established and a ceiling of 6 incorrect in 8 responses was reached before test conclusion.

The auditory comprehension portion of the PLS was administered according to test directions, beginning the test at a section approximately 6 months below the child's assumed language age. The basal is passing all items in a given section and the ceiling is failure of all items in a section.

TACL-R administration was comprised of the subject pointing to the item as it was verbally presented by the examiner. The child was instructed to point to the items by using the carrier phrase "Show me." This phrase was discontinued during the test if the subject clearly understood the task. An item was repeated once for a child who did not respond within 15 seconds, as the manual instructions allow for children below 5 years of age. The basal for the test is 4 consecutive correct items in a given section (age

levels at which to begin are given in the test booklet). The ceiling is 3 consecutive item errors in a section. When a ceiling was reached in one section, the examiner proceeded to the next section.

The 25 subjects were randomly divided into 5 groups of 5 children each for purposes of controlling for an order effect on test administration. The tests were administered by giving the hearing screening and one test on one day and the two remaining tests on two different days with all tests being administered within a 3-week period. Counterbalancing the order of test administration was accomplished by giving the 5 groups of 5 children the tests in a predetermined order as shown in Table I.

TABLE I

COUNTERBALANCED ORDER OF TEST ADMINISTRATION

| Group (n = 5) | Test | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| 1 | PPVT-R | TACL-R | PLS |
| 2 | PPVT-R | PLS | TACL-R |
| 3 | TACL-R | PPVT-R | PLS |
| 4 | TACL-R | PLS | PPVT-R |
| 5 | PLS | PPVT-R | TACL-R |

## SCORING AND DATA ANALYSIS

The PPVT-R, TACL-R, and auditory comprehension subsection of the PLS were scored by this researcher according to the instructions presented by the respective test manuals. The information determined by scoring include age equivalents for all three tests, percentiles and standard scores for the PPVT-R and TACL-R, and auditory comprehension age and auditory comprehension quotient for the receptive subtest of the PLS.

The research questions presented in the statement of purpose were answered using two different types of data analysis. The first question dealt with determining the relationship between the PPVT-R and the TACL-R and between the PPVT-R and the receptive portion of the PLS; the second question asked how the three tests compared in identifying children with deficient receptive language abilities.

The Pearson product moment correlation coefficient ($r$) was used to determine the direction and degree of relationship that exists between the standard scores of the PPVT-R versus the TACL-R and the receptive subsection of the PLS. Descriptive statistics were used to determine how the three tests compared in identifying deficient language in relation to the following cut-offs:

1. Language age 1 year below chronological age (for all tests).

2. Language age 2 years below chronological age (for all tests).

3. For the PPVT-R and the TACL-R: (a) total test score falling below the 20th percentile, and (b) total test score falling below the 10th percentile.

# CHAPTER IV

# RESULTS AND DISCUSSION

## RESULTS

The purpose of this investigation was to ccmpare the performance of preschool children on the PPVT-R with their performances on the TACL-R and the receptive portion of the PLS. The first question posed was: What is the relationship between the PPVT-R and the TACL-R and PPVT-R and receptive portion of the PLS? In order to answer the first question, the data were statisticlly analyzed using the Pearson product moment correlation coefficient (Pearson *r*) to determine if there was a significant correlation between the PPVT-R and TACL-R and between the PPVT-R and receptive subsection of the PLS. The raw test scores, ranges of raw test scores, age equivalents, mean standard scores, standard deviations, and percentile scores appear in Appendices B-F.

The resultant correlation between the mean standard scores of the PPVT-R and the PLS was .41, a moderate positive relationship. The correlation between the PPVT-R and the TACL-R mean standard scores was found to be .27, a low, but definite positive relationship (see Table II). Both of these Pearson *r*'s are statistically significant beyond the .05 level of confidence. Additionally, the amount of shared

variance between the tests was determined by computing $r^2$. Shared variance identifies the percentage of aspects common to the two tests being correlated.

TABLE II

MEANS OF TEST STANDARD SCORES, STANDARD DEVIATIONS, AND CORRELATIONS AMONG TESTS

| Test | MS | SD | r |
|---|---|---|---|
| PPVT-R | 113.76 | 12.8429 | .409 |
| PLS | 128.8 | 11.1542 | |
| PPVT-R | 113.76 | 12.8429 | .273 |
| TACL-R | 103.68 | 12.3297 | |
| TACL-R | 103.68 | 12.1297 | .293 |
| PLS | 128.8 | 11.1542 | |

In Figure 1, the areas which are shaded represent the amount of shared aspects between the tests, with the white areas showing the amount which is not accounted for. The percentage of shared variance between the tests was as follows: TACL-R and PPVT-R shared 7%; PLS and TACL-R shared 9%; and the PLS and PPVT-R shared 17% of variance.

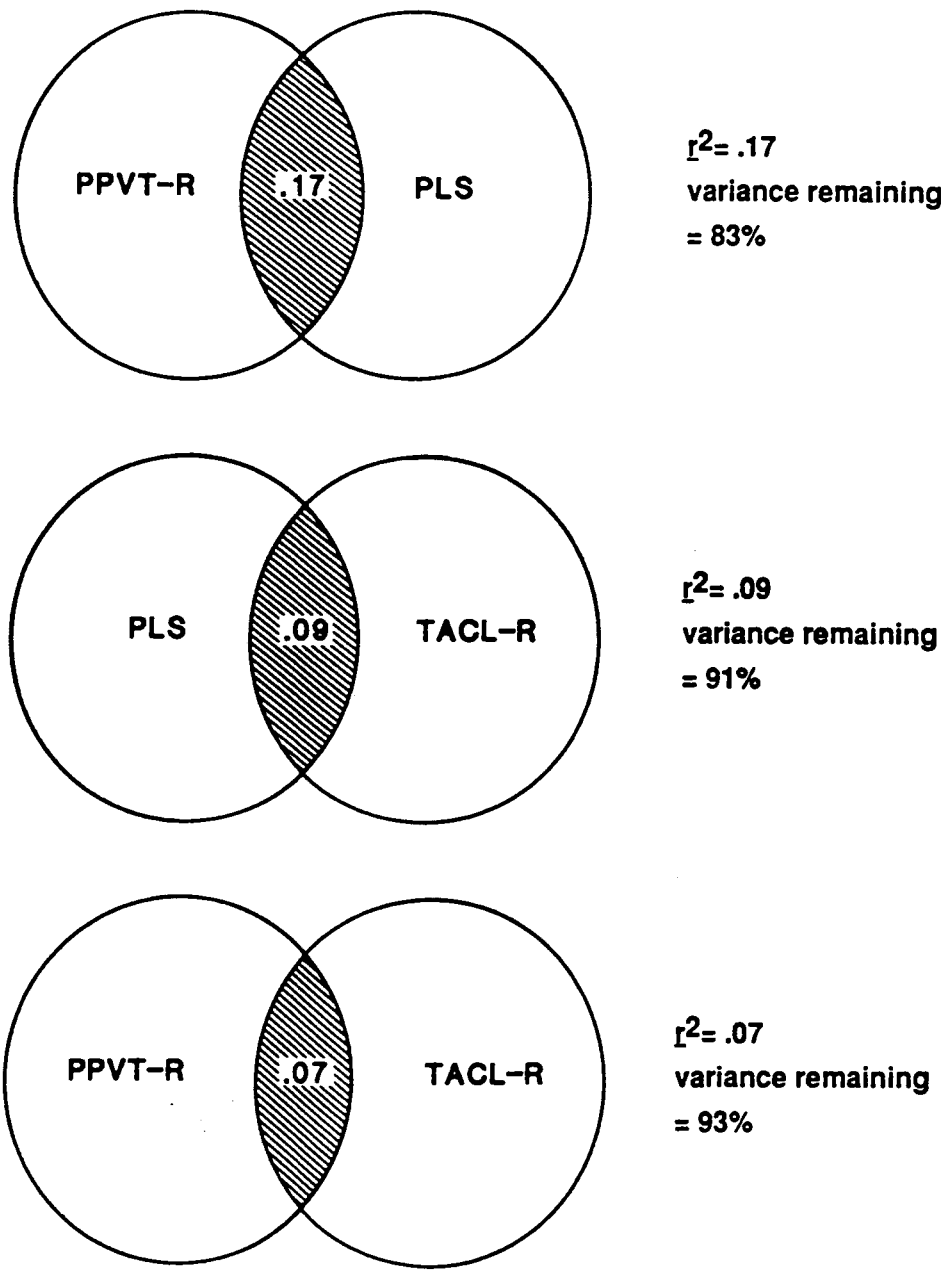


Figure 1. The shared variance among tests, representing the amount of aspects common to the three tests.

The second question posed was: How do the three tests compare in identifying preschool children who demonstrate a need for further evaluation of comprehensive abilities? In order to determine how the preschoolers in this study performed on the tests, relative to identifying potential disorders, descriptive statistics were used. Data included how many children received a language age equivalent on the tests 1 year below chronological age and 2 years below chronological age, as well as total test score below the 20th percentile and below the 10th percentile as shown in Table III.

TABLE III

CHILDREN IDENTIFIED FOR FURTHER EVALUATION

| Criteria | PLS | PPVT-R | TACL-R |
|---|---|---|---|
| Language Age 1 Year below Chronological Age | n = 0 | n = 0 | n = 2 |
| Language Age 2 Years below Chronological Age | n = 0 | n = 0 | n = 1 |
| Total Test Score Falling below 20th Percentile | n/a | n = 0 | n = 2 |
| Total Test Score Falling below 10th Percentile | n/a | n = 0 | n = 1 |

Two subjects out of the total 25 subjects performed according to these criteria with both being identified by the TACL-R. Two children were found to have an age equivalent 1 year below

chronological age and one of these children also performed 2 years below chronological age. These same two children received a percentile score falling below the 20th percentile with one score falling below the 10th percentile. These scores were also on the TACL-R. None of the 25 children in the study performed below criteria on either the PLS or the PPVT-R. Thus, the PPVT-R and PLS did not identify the same children as needing further assessment for language disorders. The PPVT-R and PLS were in 100% agreement in terms of identification of those not needing further assessment while the TACL-R alone identified 8% of the children as needing further language evaluation and did not agree with the results of either the PPVT-R or the PLS.

## DISCUSSION

In examining the results of this investigation each set of tests (PPVT-R and PLS, and PPVT-R and TACL-R) will be considered separately.

### The PPVT-R and PLS

As previously noted, a significant moderate correlation of .41 was determined to exist between the PLS and PPVT-R. In comparing these results to other earlier studies, the following results were noted. Ward's (1970) study of 22 preschool children aged 3-0 to 6-0, showed a correlation between the receptive subtest of the PLS and PPVT of .26. In a study of possible learning disabled children aged 3-0 to 6-0 by Roston (1977), a correlation of .42 was determined between

the receptive portion of the PLS and the PPVT. Zimmerman and Steiner (1970) studied 3 consecutive years of Head Start classes. When the PPVT and comprehensive section of the PLS were administered to 4-year-olds, the correlation was found to be .58 at the beginning of the school year and .36 by the end of the year. As noted previously, no reason was given for this difference.

In each study cited above and in this study, a positive correlation was found between the PPVT-R and PLS even though the tests purport to measure different aspects of receptive language skill. The PPVT-R measures receptive vocabulary and the PLS measures aspects of receptive language such as understanding word meanings, basic concepts, grammar, and stages of thought such as concrete thinking. There appears, however, to be underlying characteristics of the tests which tap similar aspects of language skill and which show up in the positive correlations determined by the previously mentioned studies.

The studies by Roston (1977) and Zimmerman and Steiner (1970) showed Pearson *r*'s similar to the one determined by this study (.41 as compared to .42 and .58, respectively). Both correlations are positive, moderate correlations. The Ward (1970) study showed a correlation of .26, indicating a lesser relationship. The reasons for the differences between the correlations of the earlier mentioned studies and the Ward (1970) study are unclear; however, the study population in Ward's study consisted of 22 children. Perhaps the

relatively small sample size did not reflect the actual correlation between the two tests and a larger correlation would have been apparent using a larger sample of children.

The shared variance between the two tests was found to be 17%. This indicates a significant relatedness between the PPVT-R and receptive section of the PLS. The above results appear to corroborate each other and support the existence of significant underlying similarities between the aspects of language being evaluated by the PPVT-R and PLS. However, one could not assume that the results of one test would predict the results of the other since there remains 83% of the variance which is not shared.

The PPVT-R and TACL-R

The correlation coefficient determined between the PPVT-R and TACL-R was .27, a definite, but low correlation. The results of a study by Sommers, Erdige, and Peterson (1978) showed a correlation of .74 between the unrevised PPVT and TACL. The subjects included 122 learning disabled children ranging in age from 3-3 to 9-4 years with a mean age of 6-4 years. Most subjects were from middle-class families. The size of the discrepancy between the results of the two studies could be due to many factors. The sample in the Sommers, Erdige, and Peterson (1978) study was different in respect to age (the mean age of the children was 1 year, 10 months older than the children in the present study). Also, the children in the Sommers, Erdige, and Peterson study were identified as learning disabled while

the children in this study were assumed to be of average intelligence. All 25 children who participated in this study were attending preschools. Nearly all of these children received elevated scores on the three tests administered. The mean chronological age of the children was 4-6 and the mean age equivalents and standard scores for the tests were as follows: PPVT-R, 5-5/113.76; PLS, 5-10/128.8; and TACL-R, 4-11/103.68. These children appear to be more likely from backgrounds that were enriched in regard to language development with the parents being middle or upper-middle class or with one or both parents attending Portland State University.

By comparing the results of this study to other studies, it may be possible to gain insight into why these children scored differently than the other study populations. The revised versions of the TACL and PPVT could be sufficiently different from the earlier versions that these changes were revealed in the low correlation coefficient. The revised version of the PPVT was altered in many ways including a larger, more diverse standardization sample, a change from I.Q. to standard score equivalents and from mental ages to age equivalents, and 25 more items per test form. The revised TACL was changed in areas such as test format, improved standardization sample, and increase in test difficulty by the addition of a section to evaluate complex sentence structure. These numerous changes could have contributed to the differences in the correlations determined by the studies.

One of the more obvious reasons that may explain the low correlation between the PPVT-R and TACL-R is that the tests may simply be evaluating different aspects of receptive language skill. The PPVT-R is a test of receptive vocabulary and the TACL-R evaluates additional aspects of receptive language such as word meaning, morphological structures, and syntax. These differences could have been revealed in the relatively low correlation coefficient of .27.

The shared variance between the PPVT-R and TACL-R was determined to be 7%. This percentage supports the determination that the two tests have only a small amount of common linguistic features.

In summary, the findings indicate that of the three tests, the PPVT-R and the PLS are testing aspects of receptive language that are more similar than those shared by the PPVT-R and TACL-R and one could more confidently use the PPVT-R and PLS as predictors of one another than one could use the PPVT-R and TACL-R. None, however, showed a strong, positive correlation.

## COMPARISON OF THE TESTS IN IDENTIFICATION

As noted earlier, only 2 subjects out of 25 (8%) performed according to the following criteria: language age 1 year below chronological age, language age 2 years below chronological age as well as total test score falling below the 20th percentile and below the 10th percentile. The 2 children who were screened into the "to be assessed"

category were identified by the TACL-R. The PLS and PPVT-R did not identify these children as needing further evaluation.

These differences between testing results could be due to the different aspects of language being assessed by the tests. It seems logical that the two tests with a higher correlation and shared variance (PPVT-R and PLS) would show more similarity in identification than the TACL-R which had a low correlation with both tests (PPVT-R $r = .27$, PLS $r = .29$).

The children in this study received overall test scores that were higher than might be expected from an "average" population. Perhaps if the three tests were given to a more "average" sample population i.e., a larger, more diverse group, they would identify more children needing further evaluation. Although these results showed only 2 children being screened into the "to be assessed" category, if the scores had been less elevated, perhaps the three tests would have commonly identified more children.

# CHAPTER V

# SUMMARY AND IMPLICATIONS

## SUMMARY

The purpose of this study was to determine the relationship between the PPVT-R and receptive subtest of the PLS and between the PPVT-R and TACL-R, as well as determine how the tests compare in identifying children in need of further evaluation in the area of receptive language. The reasoning behind the goal of this study was to determine that if the three tests showed a strong, positive correlation and identified the same children as needing further assessment, then perhaps the test which was easier and shorter to administer (the PPVT-R) could be used with more confidence as a quick, reliable screening tool of overall receptive language ability. In other words, if a child does poorly on the PPVT-R, one could assume that the child would most likely score below average on the other two tests also. Based on the results of this study, one cannot make this assumption.

The subjects in this study included 10 males and 15 females. All were preschool students, ranging in age from 4-1 to 4-11 with a mean age of 4-6 years. The subjects were given three tests in counterbalanced order. The mean age equivalents and standard scores were determined for all three

tests and percentiles were determined for the PPVT-R and the TACL-R.

The Pearson product moment correlation coefficient (Pearson $r$) was used to determine the degree of relatedness among the tests. A moderate positive correlation of .41 was found between the PPVT-R and PLS, and a low positive correlation of .27 was found between the PPVT-R and TACL-R. Shared variance ($r^2$) was 17% between the PPVT-R and PLS, and 7% between the PPVT-R and the TACL-R.

In determining how the tests identify children needing further evaluation of receptive language skills, cut-off criteria of total age equivalent 2 years and 1 year below chronological age, as well as percentile scores below the 20th and 10th percentile (for the PPVT-R and TACL-R) were used. The results indicated that only 2 of the 25 children in this study showed need for further evaluation. These were identified by the TACL-R, but not by the PPVT-R or PLS. These results seem to indicate that, based on these study results alone, one cannot use the results of any one of the tests administered as a predictor of another. However, these results may have been affected by the sample used for this study. Higher correlations and identification of more children needing further evaluation could result from use of a different, larger sample due to a greater chance that a "true" mean performance would occur given a larger, more diverse sample population.

# IMPLICATIONS

## Clinical

As noted above, the results showed that one could not, based on the results of one of the tests, assume that the subject being tested using one test would necessarily perform at an equivalent level on the other two tests. However, the results between the PPVT-R and PLS would more likely be similar than between the PPVT-R and TACL-R. On the basis of these results, this researcher would not recommend the use of the PPVT-R as a screening tool if the results are going to be used as a screening of receptive language ability in general. The three tests appear to be measuring aspects of receptive language that are different enough as to discourage the assumption that if a child did poorly on one test, he or she would do poorly on all of them. The results of this study do not seem to indicate that performances on the tests are interchangeable. One would need to use caution in using the PPVT-R, TACL-R, and PLS in any way other than recommended by the test manuals.

## Future Research Implications

This study should be replicated with varying populations, including different age levels, socioeconomic status, environments, and with a larger sample size. The benefits of replication using a more diverse and larger sample size (since only 25 children were evaluated in this study) would be to help determine if the correlation and shared variance

between tests would be increased using a more "average" sample. The larger the sample, the better the possibility of a valid "average" mean performance by the children.

It would also be useful to find out how closely other tests of comprehensive language ability such as the Assessment of Children's Language Comprehension (Foster, Giddan, and Stark, 1972), Northwestern Syntax Screening Test (Lee, 1969), Boehm Test of Basic Concepts (Boehm, 1971), and the Token Test for Children (DiSimoni, 1978) would compare in regard to total test scores, age equivalents, strength and direction of correlation, and identification of deficient comprehensive language skill in children.

## REFERENCES


Aram, D. M., Ekelman, B. L., and Nation, J. E. (1984). Preschoolers with language disorders: 10 years later. Journal of Speech and Hearing Research, 27, 232-244.

Aram, D. M. and Nation, J. E. (1980). Preschool language disorders and subsequent language and academic difficulties. Journal of Communication Disorders, 13, 159-170.

Bankson, N. W. (1977). Bankson language screening test. Austin, TX: Pro-Ed.

Berryman, J. D. (1983). Use of the revised Preschool language scale with older preschool children. Language Speech and Hearing Services in the Schools, 14, 75-78.

Boehm, A. E. (1986). Boehm test of basic concepts-revised. San Antonio, TX: The Psychological Corporation.

Bracken, B. A. and Prasse, D. P. (1983). Concurrent validity of the PPVT-R for "at risk" preschool children. Psychology in the Schools, 20, 13-15.

Carrow, E. (1973). Test of auditory comprehension of language. Austin, TX: Teaching Resources Corp.

Carrow, E. and Lynch, J. I. (1973, October). Comparison of auditory comprehension in three groups of linguistically deviant children. Paper presented at the annual convention of the American Speech and Hearing Association.

Carrow-Woolfolk, E. (1985). Test of auditory comprehension of language-revised. Test and Manual. Austin, TX: Learning Concepts.

Choong, J. and McMahon, J. (1983). Comparison of scores obtained on the PPVT and the PPVT-R. Journal of Speech and Hearing Disorders, 48, 36-40.

DiSimoni, F. (1978). The Token test for children. Hingham, MA: Teaching Resources.

Dodge, G. R. (1980). A comparison of language screening methods. Language, Speech, and Hearing Services in the Schools, 11(4), 214-224.

Dunn, L. M. (1959). Peabody picture vocabulary test. Circle Pines, MN: American Guidance Service.

Dunn, L. M. and Dunn, L. (1981). Peabody picture vocabulary test-revised. Circle Pines, MN: American Guidance Service.

Dunn, L. M. and Markqwardt, F. C. (1970). Peabody individual achievement test. Circle Pines, MN: American Guidance Service.

Fluharty, N. B. (1974). The design and standardization of a speech and language screening test for use with preschool children. Journal of Speech and Hearing Disorders, 39, 75-88.

Foster, R., Giddan, J. J., and Stark, J. (1972). Assessment of children's language comprehension. Palo Alto, CA: Consulting Psychologists Press.

Frankenburg, W., Dodds, J., and Fandal, A. (1970). Denver developmental screening test. Denver: University of Colorado.

Hagen, E. P. and Sattler, J. H. (1986). Stanford-Binet intelligence scale. Chicago: Riverside Publishing.

Hollinger, C. L. and Sarvis, P. A. (1984). Interpretation of the PPVT-R: a pure measure of verbal comprehension? Psychology in the Schools, 21, 32-39.

Hresko, W., Reid, D. K., and Hammill, D. D. (1981). The test of early language development. Austin, TX: Pro-Ed.

Illerbrun, D., Haines, L., and Greenough, P. (1985). Language identification screening test for kindergarten: a comparison with four screening and three diagnostic screening tests. Language, Speech and Hearing Services in the Schools, 16, 280-292.

King, R. R., Jones, C., and Lasky, E. (1982). In retrospect: a fifteen year follow up report of speech-language disordered children. Language, Speech, and Hearing Services in the Schools, 13(1), 24-32.

Lee, L. (1969). Northwestern syntax screening test. Evanston, IL: Northwestern University.

Marquardt, T. P. and Saxman, J. H. (1972). Language comprehension and auditory discrimination in articulatory deficit kindergarten children. Journal of Speech and Hearing Research, 15, 382-389.

McCallum, S. (1985). Review of the Peabody picture vocabulary test-revised. In J. V. Mitchell (Ed.), Ninth mental measurement yearbook: vol. II, 1126-1128. New York: Buros Institute.

McCarthy, D. (1972). McCarthy scales of children's abilities. New York: The Psychological Corporation.

McLoughlin, C. S. and Gullo, D. F. (1984). Comparison of three formal methods of preschool language assessment. Language, Speech, and Hearing Services in the Schools, 15, 146-153.

Mecham, M. J., Jex, J. S., and Jones, D. J. (1973). Use of Utah test of language development for screening language disabilities. Journal of Learning Disabilities, 6(7), 65-68.

Musselwhite, C. R. (1973). Pluralistic assessment in speech-language pathology: use of dual norms in the placement process. Language, Speech, and Hearing Services in the Schools, 14 29-37.

Naglieri, J. A. (1981). Concurrent validity of the revised Peabody picture vocabulary test. Psychology in the schools, 18, 286-289.

Naglieri, J. A. and Naglieri, D. A. (1981). Comparison of the PPVT and PPVT-R for preschool children: implications for the practitioner. Psychology in the Schools, 18, 434-436.

Roston, A. (1977). Peabody picture vocabulary test and preschool language scale results for preschool and kindergarten children. Unpublished manuscript.

Scott, G. H. (1973). A comparison of the Utah test of language development and the preschool language scale. Unpublished master's thesis, Illinois State University.

Sommers, R. K., Erdige, S., and Peterson, M. K. (1978). How valid are children's language tests? The Journal of Special Education, 12, 93-107.

Tomblin, J. B. and Hall, P. K. (1978). A follow-up study of children with articulation and language disorders. Journal of Speech and Hearing disorders, 43, 227-341.

Ward, D. (1970). A comparison of the preschool language scale and the Peabody picture vocabulary test. Unpublished paper.

Wechsler, D. (1974). Wechsler intelligence scale for children-revised. New York: The Psychological Corporation.

Weiner, P. S. (1972). The perceptual level functioning of dysphasic children: a follow-up study. Journal of Speech and Hearing Research, 15, 423-438.

Wiig, E. (1985). Review of the Peabody picture vocabulary test-revised. In J. V. Mitchell (Ed.), Ninth mental measurement yearbook: vol. II, 1127-1128. New York: Buros Institute.

Wolski, W. (1962). Michigan picture language inventory. Ann Arbor: University of Michigan.

Worthing, R. J., Phye, G. E., and Nunn, G. D. (1984). Equivalence and concurrent validity of PPVT-R, forms L and M for school age children with special needs. Psychology in the Schools, 21, 438-441.

Zimmerman, I. L. and Steiner, V. G. (1970). Validity and evaluation of the preschool language scale. American Psychologist, 25, 1125.

Zimmerman, I. L., Steiner, V. G., and Pond, R. E. (1979). Preschool language scale. Test and Manual. Columbus, OH: Charles E. Merrill.

# APPENDIX A

## LETTER OF PERMISSION AND CONSENT FORM

Dear Parent or Guardian:

I am a graduate student in Speech-Language Pathology at Portland State University. I am conducting a study of children's responses on 3 tests of language understanding: the Peabody Picture Vocabulary Test-Revised, the Test of Auditory Comprehension-Revised, and the Preschool Language Scale. The children involved in the study will be between the ages of 4-0 and 5-0. These 3 tests evaluate a child's understanding of various aspects of language and requires only pointing or demonstrating an action for a response.

This study includes administration of a hearing screening test given by myself. Children who qualify to participate in the study will be administered the 3 tests on 3 separate days; the time for testing per test ranges from 10 to 20 minutes. The results of the tests will be used for the study only. Your child's name will not be on any test form. There are no physical risks to your child. Your child may be withdrawn from participation in this study at any time without jeopardizing your child in any manner.

If you have any questions, please contact me at 640-4868, or my thesis advisor, Mary Gordon, at 464-3531. If you would allow your child to be a potential participant in this study, please fill out the attached permission form and return it to school tomorrow morning. Your child's participation in this study would be highly appreciated; it will help increase the knowledge of childrens' understanding of language.

Sincerely,

Alissa Nordlund
Graduate Student
Speech-Language Pathology
Portland State University

If you experience any problems as a result of your participation in this study, please contact the secretary of the human sugjects Research and Review Committee, Office of Grants and Contracts, 303 Cramer Hall, Portland State University, 464-3417.

I permit my child, _____, to participate in this study.

Please check: ____ English is spoken at home

____ More than one language is spoken at home (Spanish, German, etc.)

_____ _____

Signature Date

(Please have your child return this form to his or her teacher.)

# APPENDIX B

## RAW SCORES OF TESTS

| Subjects | PLS | PPTV-R | TACL-R |
|---|---|---|---|
| 1 | 32 | 55 | 35 |
| 2 | 40 | 52 | 88 |
| 3 | 40 | 52 | 58 |
| 4 | 41 | 57 | 58 |
| 5 | 44 | 69 | 74 |
| 6 | 36 | 49 | 46 |
| 7 | 36 | 62 | 68 |
| 8 | 34 | 59 | 65 |
| 9 | 42 | 55 | 70 |
| 10 | 40 | 79 | 93 |
| 11 | 44 | 63 | 72 |
| 12 | 44 | 87 | 56 |
| 13 | 39 | 84 | 59 |
| 14 | 38 | 61 | 58 |
| 15 | 41 | 72 | 69 |
| 16 | 38 | 55 | 80 |
| 17 | 36 | 43 | 71 |
| 18 | 37 | 64 | 65 |
| 19 | 40 | 62 | 60 |
| 20 | 36 | 73 | 86 |
| 21 | 39 | 64 | 77 |
| 22 | 34 | 77 | 77 |
| 23 | 41 | 78 | 71 |
| 24 | 34 | 56 | 45 |
| 25 | 31 | 51 | 56 |

# APPENDIX C

## TABLE IV

## RANGES AMONG RAW TEST SCORES

| Scores | PLS | TACL-R | PPVT-R |
|---|---|---|---|
| High | 142 | 135 | 141 |
| Low | 107 | 77 | 92 |
| RANGE | 35 | 52 | 49 |

n = 25

# APPENDIX D

## AGE EQUIVALENT MEANS IN MONTHS

| Subject | CA | PPVT-R | PLS | TACL-R |
|---|---|---|---|---|
| 1 | 56 | 57 | 60 | 41 |
| 2 | 59 | 54 | 72 | 75 |
| 3 | 58 | 54 | 72 | 53 |
| 4 | 55 | 59 | 74 | 48 |
| 5 | 59 | 71 | 78 | 64 |
| 6 | 59 | 52 | 66 | 34 |
| 7 | 51 | 64 | 66 | 59 |
| 8 | 54 | 61 | 63 | 57 |
| 9 | 53 | 57 | 75 | 61 |
| 10 | 57 | 81 | 72 | 81 |
| 11 | 49 | 65 | 78 | 62 |
| 12 | 52 | 91 | 78 | 52 |
| 13 | 55 | 87 | 71 | 53 |
| 14 | 57 | 63 | 69 | 65 |
| 15 | 57 | 74 | 74 | 60 |
| 16 | 50 | 57 | 69 | 68 |
| 17 | 49 | 48 | 66 | 61 |
| 18 | 52 | 66 | 68 | 57 |
| 19 | 58 | 62 | 72 | 54 |
| 20 | 52 | 75 | 66 | 73 |
| 21 | 52 | 66 | 71 | 66 |
| 22 | 51 | 79 | 63 | 66 |
| 23 | 56 | 80 | 74 | 61 |
| 24 | 50 | 58 | 63 | 46 |
| 25 | 50 | 53 | 59 | 52 |

# APPENDIX E

## TABLE V

## MEAN TEST STANDARD SCORES AND STANDARD DEVIATIONS

| Test | MS | SD |
|---|---|---|
| TACL-R | 103.680 | 12.240 |
| PLS | 128.800 | 11.154 |
| PPVT-R | 113.760 | 12.843 |

# APPENDIX F

## PERCENTILE SCORES AND MEAN PERCENTILES

| Subject | PPVT-R | TACL-R |
|---|---|---|
| 1 | 61 | 6 |
| 2 | 39 | 89 |
| 3 | 45 | 33 |
| 4 | 66 | 20 |
| 5 | 84 | 71 |
| 6 | 30 | 16 |
| 7 | 86 | 68 |
| 8 | 70 | 51 |
| 9 | 66 | 75 |
| 10 | 97 | 95 |
| 11 | 91 | 66 |
| 12 | 99 | 31 |
| 13 | 99 | 34 |
| 14 | 70 | 33 |
| 15 | 92 | 60 |
| 16 | 73 | 89 |
| 17 | 47 | 77 |
| 18 | 86 | 64 |
| 19 | 68 | 37 |
| 20 | 96 | 94 |
| 21 | 86 | 87 |
| 22 | 98 | 87 |
| 23 | 97 | 65 |
| 24 | 75 | 35 |
| 25 | 63 | 47 |
| | MEAN = 75th | MEAN = 57th |