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## A Comparison of Overall Verb Complexity between Aphasic Adults and Language Disordered Children

Cheri Suzanne Carrico

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A COMPARISON OF OVERALL VERB COMPLEXITY BETWEEN  
APHASIC ADULTS AND LANGUAGE DISORDERED CHILDREN

by

Cheri Suzanne Carrico

A Thesis  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
Degree of Master of Arts  
Department of Speech Pathology and Audiology

Western Michigan University  
Kalamazoo, Michigan  
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# A COMPARISON OF OVERALL VERB COMPLEXITY BETWEEN APHASIC ADULTS AND LANGUAGE DISORDERED CHILDREN

Cheri Suzanne Carrico, M.A.

Western Michigan University, 1981

In this investigation, no difference in the overall complexity of verbs produced in spontaneous speech existed between adults and children with primarily expressive language disorders. Six adults, four males and two females between 37;1 and 68;7 years of age, and eight children, five males and three females between 4;3 and 8;3 years of age, comprised the subjects. Each had essentially intact receptive language skills, but was deficient in expressive language abilities. None evidenced a history of hearing, mental or emotional deficits.

Spontaneous language samples elicited from each subject were scored using the Developmental Sentence Scoring (DSS) procedure (Lee, 1974). Marginal, but inconclusive, evidence of a difference between the mean DSS values of the two groups was found,  $t(12) = -2.05$ ,  $p > .05$ ; however, no differences in overall verb complexity were noted,  $t(12) = 1.57$  from the data;  $t(12) = 1.78$ ,  $p = .10$  from the tables. Interestingly, the DSS values and overall verb complexity levels were relatively highly correlated,  $r = .53$ . In addition, no differences between the two groups in the percentages of verbs produced correctly were observed,  $t(12) = -.47$ ;  $p \gg .2$ .

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Cheri Suzanne Carrico

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## A COMPARISON OF OVERALL VERB COMPLEXITY BETWEEN APHASIC ADULTS AND LANGUAGE DISORDERED CHILDREN

Adults and children with expressive language disorders exhibit several similarities in their speech. Among the salient characteristics of the oral language of adults with primarily an expressive aphasia, commonly referred to as Broca's, nonfluent, and motor aphasia, are its simplified, telegraphic, agrammatic nature (De Villiers, 1974; Goldstein, 1948; Goodglass, 1968; Goodglass, Fodor, & Schulhoff, 1967; Halpern, 1972; Myerson & Goodglass, 1972; Von Stockert, 1972; Weisenberg & McBride, 1964; Zurif, Caramazza, & Myerson, 1972; Zurif, Green, Caramazza, & Goodenough, 1976). Children with a primarily expressive language disorder also present reductions in the grammatical/syntactical complexity of their utterances (Johnson & Mykelbust, 1967; Van Riper, 1972). These reductions frequently include the deficient usage of verb forms, in addition to other simplifications (Clark, 1981; Ingram, 1972; Lee, 1966; Leonard, 1972; Menyuk, 1978; Moran & Byrne, 1977; Steckol & Leonard, 1979; Tyack, 1969).

Although there are indications in the literature that adults with aphasia and children with language disorders share common language characteristics, comparisons of these two populations are lacking. Research investigating specific grammatical structures spontaneously produced by either group also is limited. The few studies which have investigated specific grammatical structures indicate that verb forms are likely to be deficient in the utterances of both children (Bliss & Peterson, 1975; Ingram, 1972; Leonard, 1972; Menyuk, 1978; Moran & Byrne, 1977; Tyack, 1969) and adults (Goodglass, Gleason, Bernholtz, & Hyde, 1972;

Myerson & Goodglass, 1972; Von Stockert, 1972).

Carrow (1974, p. 14) observes that most of the grammatical errors in children's speech occur with verbs. Therefore she states, "a complete analysis of a child's verb errors will supply information relative to the types of errors and the contexts within which the errors occur."

This study compares language samples produced by both adults and children with primarily expressive language disorders. Specifically examined are the levels of complexity of verb structures produced in spontaneous speech by both groups. It is hypothesized that there will be no statistically significant differences in the grammatical complexity levels of verb forms used by members of these two populations.

## REVIEW OF SELECTED LITERATURE

Various researchers have investigated specific grammatical structures produced in the speech of language disordered children and aphasic adults. Not too surprisingly, they independently have come up with similar findings. Both children and adults with language disorders frequently omit verbs from their utterances, and when verbs are used, the productions are often in simplified or deficient form (Clark, 1981; Goodglass, 1968; Goodglass et al., 1972; Goldstein, 1948; Leonard, 1972; Myerson & Goodglass, 1972; Tsvetkova & Glozman, 1975; Tyack, 1969). The following is an overview and comparison of the literature regarding verb forms found to be used either correctly or deficiently by these two language disordered populations.

The most frequently described verb form errors in the oral speech of adults and children with language disorders are the omission and reduction of verbs and verb markers. For example, Myerson and Goodglass (1972, p. 40) observed that the agrammatic speech of adult aphasic patients is characterized by a marked "tendency to omit...inflectional endings while retaining the high content words which become unmarked for grammatical relationships." Goodglass (1968) described the verbs of one of his adult patients as having no inflections at all which marked verb tense. Of the three subjects of Myerson and Goodglass (1972), one used verbs only in either the unmarked form, for example, "work," or in the progressive form, for example, "working." Because he never used a subject and a verb together in one utterance, there were no occasions for an inflectional marking on a third person singular present tense verb.

Two of the patients they studied exhibited similar instances of the unmarked and progressive verb forms, but they occasionally also correctly marked the tense of these verb forms. Additionally, these latter two subjects demonstrated some instances of simple past tense verbs marked with the appropriate inflection, and the modals "can't" and "don't." From their observations of these three subjects, Myerson and Goodglass (1972) concluded that, of all verb markings, the progressive form "ing" was the best preserved, with other tense inflections following.

De Villiers (1974), in an analysis of adult aphasics' ability to use Brown's 14 grammatical morphemes where required in spontaneous speech, also found the progressive "ing" to be among the most easily produced. The contractible copula, uncontractible copula, past regular "ed," past irregular, and third person singular "s" were progressively more difficult.

According to Goodglass (1968), expressive (Broca's) aphasics exhibit more frequent usage of the present progressive, both in its correct form and as a substitute for other verb forms, than do any other types of aphasic persons. The present progressive also is the tense used correctly most often by these aphasics.

Goodglass et al. (1972) administered a "story completion test" to an adult aphasic and documented the results. An analysis of the syntactic components of the subject's responses revealed that unmarked verb forms and the copula, especially in the present progressive form, were the features most consistently retained. Past tense verbs usually either were unmarked for tense or incorrectly marked in the present tense; however, there were some instances of appropriate marking on regular past

tense verbs and with the passive auxiliary "got." The final "s" of third person singular verbs, the future tense marker "will," and "did" as an interrogative auxiliary usually were omitted, but on occasion "are" was substituted for "did." Auxiliaries and inflections thus were the forms most frequently omitted, whereas unmarked verbs and the copula were the best preserved.

In a comparison of expressive (agrammatic) and nonagrammatic aphasic adults' ability to repeat phrases and sentences, Goodglass and Mayer (1958, p. 109) observed that the agrammatic subjects tended "to fall back on a small repertory of most habitued and simple sentence types and to ignore those grammatical structures or words which represented more complex syntactic relationships." These subjects more frequently lost the interrogative reversal word sequence, omitted more grammatical morphemes, and used a greater number of simplified verb forms than did the nonagrammatic group.

Tsvetkova and Glozman (1975, p. 73) further uphold the findings of the foregoing studies. They note that although expressive (motor) aphasics frequently omit verbs from their utterances, when they are used, there is a "tendency toward overuse of present tense verbs, reduction of the number of future tense verbs...and a limited ability to make use of the passive forms of verbs."

From the preceding investigations, it is apparent that in the speech of adults with aphasia, verb form productions often are simplified. Frequently this simplification involves the omission of verb tense markers, especially the third person singular present tense marker "s," past

regular and irregular inflections, and auxiliaries. The verb forms most frequently used by this population include unmarked verbs and the progressive "ing." As will be shown, similar findings have been observed in the speech of children with language disorders.

In a study of children with "subclinical brain damage" or "delayed language," Clark (1981) observed that the children studied primarily used verbs in the present tense. Forms of the verb "to be" and the third person singular present tense marker "s" often were omitted. These children tended to use the infinitive form for every case of person and to exhibit difficulty using the correct interrogative form in asking questions.

Tyack (1969) observed that her ten year old subject with a language disorder omitted tense markers or used them incorrectly on irregular past tense verbs. In addition, he occasionally marked tense twice, on both the auxiliary and the main verb, especially in question transformations. Further difficulty with tense markers was observed in learning disabled children. These errors involved regular past tense inflections added to irregular verbs, uninflected present tense in place of past tense verbs, incorrect vowel shift as in "swang" rather than "swung," and "redundant markers which included both the double regular marker, as in 'drinkted,' and the vowel shift plus regular marker, as in 'dranked'" (Moran & Byrne, 1977, p. 537).

In a comparison of 13 language disordered children's responses on a sentence repetition test, Menyuk and Looney (1972b) found that whether or not final consonants were repeated in words depended on the syntactic role of the consonants. In marking tense or plurality, the consonants fre-



quently were omitted. However, as a part of a word stem, they usually either were repeated or were replaced by another consonant. Specifically, as third person singular, past tense, and present participle markers, respectively, the final /s/, /d/, and "ing" more frequently were omitted as markers than they were as parts of words, such as "grass," "friend," and "nothing."

In yet another study, Menyuk (1978) noted that preschoolers with language disorders omit verb tense markers, whereas normal children of the same age substitute other forms for them. In addition, she observed that the expansion of verb phrases through the use of other syntactic categories, such as modal and auxiliary verbs was delayed in language disordered children. Other researchers also have observed that children with language disorders exhibit difficulty with modals, copulas, and auxiliary verbs in their speech. For instance, in a comparison of 60, seven year old learning disabled children with 60 normal children of the same age, Moran and Byrne (1977) found that the learning disabled children frequently omitted auxiliaries and the "ing" inflection on a test of verb tense markers, whereas the normal children did not omit these forms. Leonard (1972) also observed difficulty with the auxiliary in his language disordered subjects. He discovered that the auxiliary "be" was omitted significantly more often by children with deviant language than it was by children developing language normally. Difficulty with auxiliary verbs additionally was observed by Menyuk and Looney (1972a). They noted that language disordered children's most frequent errors in the repetition of passive, negative, negative subject, and question sentences were those

evident in verb phrase expansions, particularly with expansions involving auxiliary verbs and modals.

On a sentence repetition task, Bliss and Peterson (1975), observed that "aphasic" and "nonaphasic" children both made the same types of errors, but there was a greater frequency of occurrence among the aphasic group. The two types of errors made most often by both groups were reductions and auxiliary errors. A reduction was defined as a "deletion of one or more elements of the auxiliary resulting in a grammatical sentence on a lower level of complexity," whereas an auxiliary error was defined as a "substitution or deletion of the modal, perfective, or progressive form occurring in a stimulus resulting in an ungrammatical sentence" (p. 210).

In her study of a ten year old boy with a language disorder, Tyack (1969) made the following observations regarding his productions. Although his errors were inconsistent, the child sometimes omitted the "be" and at other times the "ing" from present progressive verbs and occasionally joined two modals as one verb. Also copula errors took a variety of forms. In some instances the copula was omitted, in others it was added twice, and sometimes the auxiliary "have" was substituted for "be."

In a comparison of normal and linguistically deviant children's usage of forms of "to be," Ingram (1972) found no statistically significant difference in the number of sentence productions which employed some form of this structure; however, children from the normal group supplied the forms more consistently. Ingram (1972, p. 84) further observed that "both groups supplied forms of 'to be' for the copula at a higher per-

tage than for the verbal auxiliary. This was particularly true for the deviant group which showed a marked preference for the copula usage." Similar results were observed by Steckol and Leonard (1979). In a study of normal and language deficient children's usage of present progressive, copula, and auxiliary verbs, they found that the 10 language deficient children used the present progressive tense most frequently, followed by the copula, and then the auxiliary. Lee (1966) compared the language of a language disordered child to that of a child developing language normally. She similarly observed that the former exhibited difficulty with general predicative constructions, but especially specifically using "is."

A comparison of the studies cited above clearly indicates that, although individual differences exist, both adults and children with language disorders present similar reductions in the grammatical complexity of their utterances. These similarities are noted particularly with respect to the verb forms they produce. Deficiencies in this area that are common to both populations primarily involve the omission and defective usage of modals, auxiliaries, copulas, and verb markers, especially the third person singular present tense marker "s" and regular and irregular past tense inflections. Often these forms are omitted. In addition, it is the progressive verb inflection which is among the best preserved verb forms in the speech of adults with aphasia and also is the least likely to be deficient in children with language disorders. In conjunction with uninflected verbs, the progressive is the form used most frequently by both populations, with copulas and then auxiliaries being increasingly

more difficult.

It is interesting to note that in neither the adult nor the child studies were there conflicts in the substance of the findings when the same aspects of language were analyzed. In other words, the research indicates that both groups produce comparable verb structures in expressive speech. Yet, despite the numerous similarities which were observed in an examination of the literature, comparisons of adults and children with language disorders were not found.

Additionally, there were other limitations to the research which should be noted. First, different experimental procedures were employed by different investigators. For instance, some authors used spontaneous speech samples whereas others used sentence repetition tasks. Nevertheless, similar results were obtained with both methods. Second, sample sizes frequently were small, making it difficult to generalize the conclusions drawn or to assume they were statistically representative of the population at large. Last, the terminology used to classify the children and adults varied. This deviation was a problem especially with the child studies because the authors frequently did not clearly specify the language and nonlanguage characteristics of their subjects. Therefore, it was often unclear as to which subpopulation of language disordered children was being described. Yet, in spite of these dissimilarities in the research, the outcome of the results was strikingly homologous.

## DESIGN AND METHODOLOGY

### Subjects

Subjects for this study consisted of six adults and eight children. All were selected on the basis of their demonstrating a primarily expressive language disorder. Each had been or currently was receiving speech and language therapy for this disorder. None evidenced a history of hearing impairment, mental impairment, or emotional disturbance that was reported as interfering with their language use.

In order to qualify for this investigation, the adult aphasics were required to be a minimum of one year post-onset of their stroke. All had at least an eighth grade education, demonstrated no history of speech and language problems prior to the onset of their aphasia, and previously were diagnosed as having Broca's (expressive) aphasia by a certified speech pathologist.

The children qualified for this study if they were at least four years of age, were not more than nine months delayed in receptive language development as indicated by scores obtained on the Test for Auditory Comprehension of Language (Carrow, 1973), and were more than two years delayed in expressive language development as identified by spontaneous language samples scored using the Developmental Sentence Scoring (DSS) procedure (Lee, 1974) and a certified speech pathologist. Additionally, all exhibited an expressive-receptive gap of greater than one year. Children in this study were required to be at least four years old because,

by this age, normal children are capable of using all of the basic structures of adult grammar. As Menyuk (1964b, p. 545), in her study of the syntactic rules employed by children from 3 to over 7 years of age, who were developing language normally states, "Almost all the basic structures used by adults to generate their sentences can be found in the grammar of children as young as 2 years, 10 months to 3 years, 1 month." Thus children who were expected to be using all the basic language structures, but were not, comprised the child population of this study.

The adults consisted of four males and two females with ages between 37;1 and 68;7 years, with the mean age being 54;7 years. The range of years since onset of the last stroke was 1;2 to 12;9, with the mean being 7;2 years. The children consisted of five males and three females between 4;3 and 8;3 years of age with the mean age being 5;10.

All of the subjects lived in southern Michigan. Six were from the Western Michigan University Language, Speech and Hearing Clinic, Department of Speech Pathology and Audiology. Two were from elsewhere in the Kalamazoo area. Six were from the metropolitan Detroit area. All were Caucasian.

### Procedure

Informal conversations with the examiner and discussions stimulated by photographs selected from magazines and the subjects' personal photograph albums were the stimuli for the spontaneous utterances the adults produced. Toys, storybooks, and other materials appropriate to the child's age level were used to encourage the children's spontaneous sentence pro-

ductions. All subjects produced utterances in response to the "Cookie Theft" stimulus card from the Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1972). The adults conversed with the examiner; however, the children often interacted with their speech clinician or a parent, in addition to the examiner. Language sampling was conducted in a relaxed and casual atmosphere and in an environment familiar to the subject.

Of the utterances produced during language sampling, 50 productions which met criteria for Developmental Sentence Scoring (Lee, 1974) were chosen for each subject's language sample. This criteria included selecting only those utterances which were unidentical, intelligible, spontaneously produced, and which contained at least a subject and a predicate. Repetitions of the examiner's utterances were not included.

All of the subjects except two adults met these criteria. These adults produced only 23 and 25 utterances which met the criteria of having a noun and verb in subject-predicate relation, as required by Lee (1974). Therefore, sentences containing two or more words, one of which was a verb, also were included as part of the corpus of their utterances. Myerson and Goodglass (1972) found this same phenomenon in the speech of one of their aphasic patients who produced noun phrases and verb phrases, but could not link the two together.

Additionally, an apraxia test was administered to each subject. For the adults, the instrument was the Apraxia Battery for Adults (Dabul, 1979). For the children, the Screening Test for Developmental Apraxia of Speech (Blakely, 1980) was used.

Utterances produced by each subject were recorded on cassette tapes

using a Panasonic RQ-413S tape recorder. To reduce any uncertainties as to what might have been recorded on the tapes, the examiner also simultaneously wrote the utterances verbatim on paper.

### Data Analysis

Each subject's language sample was scored using the DSS procedure (Lee, 1974). This system divides verbs and other grammatical structures into eight levels of development. A progressively greater point value, corresponding to the appropriate level of development, is awarded to increasingly more complex grammatical/syntactical structures (see Table 4, Appendix).

In addition to the overall DSS value, the analysis of the data pertinent to this study deals with only those structures falling into the primary and secondary verb categories of the DSS system. For statistical purposes, these two divisions were collapsed into one. The specific number of verbs produced correctly by the adults and children at each level of the DSS is given in Table 5 (Appendix). As was stated earlier, it was hypothesized that there would be no significant difference in the overall complexity of verb forms produced in spontaneous speech by adults and children with primarily expressive language disorders.



## RESULTS

Although a comparison of the mean DSS values from the adult and child samples yielded inconclusive results, no significant difference in overall verb complexity was observed between the two populations. The following is a description of the specific statistical analyses employed in obtaining these results.

After the DSS value was determined for each subject's language sample, the means from the adult and child samples were compared using a two-tailed  $t$ -test for unrelated means (see Table 1, p.16). From the sample data, the results were inconclusive,  $t(12) = -2.05$ ,  $p > .05$ . Because of the marginal evidence of this test, the null hypothesis could not be rejected. Therefore, further testing on a greater number of subjects is indicated before more definite conclusions can be drawn regarding differences in grammatical complexity, as measured by DSS.

In addition, of the total number of verbs attempted during language sampling, the percentages of verbs produced correctly was determined for each subject (see Table 2, p.17). A comparison of the mean percentage of verbs produced correctly by the adults and children revealed no significant difference between the two populations,  $t(12) = -.47$ ,  $p \gg .2$ . Therefore it was demonstrated that the spontaneous utterances of both groups were equally correct, insofar as verb forms were concerned. However, since accuracy does not necessarily indicate complexity, and DSS values include factors in addition to verb scores, another analysis, which measured each subject's performance based on verbs alone, was per-

formed.

Table 1  
Summary of Adult and Child DSS Values

<u>Subject</u>	<u>Adult DSS</u>	<u>Child DSS</u>
1	6.40	5.84
2	6.36	5.80
3	5.58	4.34
4	8.56	7.70
5	<sup>a</sup> 4.66	4.68
6	<sup>a</sup> 9.72	5.46
7	--	2.72
8	--	1.54
<u>Mean</u>	<u>6.88</u>	<u>4.76</u>
<u>S.D.</u>	<u>1.90</u>	<u>1.93</u>

<sup>a</sup> Although the utterances of these two subjects did not meet the criteria for developmental sentence scoring (DSS), this occurrence was not felt to be unusual among adults with aphasia. Thus their language samples were included.

Table 2

Summary of Percentages of Correct Verbs for Adults and Children

<u>Percentages of Verbs Produced Correctly Based on Total Number of Verbs Attempted</u>		
<u>Subject</u>	<u>Adult</u>	<u>Child</u>
1	52.9	94.8
2	71.2	69.8
3	66.1	50.0
4	89.4	68.7
5	56.9	54.1
6	43.8	66.1
7	--	37.7
8	--	26.7
Mean	63.37	58.50
S.D.	16.02	21.20

A weighted level score (WLS) was determined for each subject, using the following calculation:

$$\begin{aligned}
 WLS &= \sum_{L=1}^8 p_L \cdot L \\
 &= p_1(1) + p_2(2) + p_3(3) + p_4(4) + p_5(5) + p_6(6) + p_7(7) + p_8(8).
 \end{aligned}$$

$$\sum_{L=1}^8 p_L = 1. \text{ (Sum of the probabilities = 1)}$$

where L = level from the DSS procedure, and

$p_L$  = percentage of verbs produced correctly at each level L, based on the total number of verbs attempted during language sampling.

The WLS provided a single, normally distributed measure for each subject's data, and thus could be treated using a standard statistical procedure. A two-tailed  $t$ -test between the mean WLS values from the adult and child samples indicated that the null hypothesis could not be rejected because  $t$  was less than the critical value,  $t(12) = 1.57$  from the data;  $t(12) = 1.78$ ,  $p = .10$  from the tables (see Table 3, p. 18). Therefore it was concluded that there was no significant difference in the overall complexity of verbs produced in spontaneous speech by the adults and children with expressive language disorders.

Table 3  
Summary of Adult and Child WLS Values

<u>Subject</u>	<u>Adult WLS</u>	<u>Child WLS</u>
1	1.32	1.75
2	2.23	1.93
3	1.76	1.97
4	3.08	2.21
5	2.67	1.91
6	3.54	1.88
7	--	1.65
8	--	1.81
Mean	2.43	1.89
S.D.	0.83	0.17

Since the WLS value is indicative of overall verb complexity and the DSS value suggests overall grammatical/syntactical complexity, the two are similar measures of performance. Therefore it is relevant to

compare them using the correlation coefficient. The result  $r = .53$  illustrates the degree of correlation between the two scores. In essence this correlation value means that the variability in the WLS value explains 53% of the variability in the DSS value. The remaining 47% of the variability in the DSS is due to the influence of other grammatical forms analyzed by the DSS procedure. Thus, the largest single factor explaining DSS variability is verb complexity, as measured by WLS, and it can be concluded that verb scores are the primary factor affecting the DSS value.

In summary, it was observed that adults and children with expressive language disorders produce both similar rates of error and similar levels of overall complexity on verbs uttered in spontaneous speech. In addition, although a test of the difference between the mean DSS values of the two groups was inconclusive, relatively strong evidence against rejecting the null hypothesis was illustrated in a test between the mean WLS values. Accordingly, it appears that the marginal evidence demonstrated by the difference in the DSS values is due to grammatical factors other than verbs, since a relatively high correlation exists between the DSS and WLS values.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions and Implications of This Study

The purpose of this investigation was to determine whether or not a difference in the overall complexity of verbs produced in spontaneous speech exists between adults and children with expressive language disorders. As was evidenced in the results, no difference between the two populations was observed.

A marginal difference, however, did appear to exist between the DSS values of the adult and child samples. Before definite conclusions can be drawn, more testing on a larger number of samples needs to be conducted. Then, if differences between the two populations are found, it is speculated that these differences will be due, at least in part, to the adults' premorbid facility with language structures. Further, a comparison of grammatical/syntactical structures other than verbs is necessary to pinpoint where the differences lie, if there truly are any.

The WLS, used to compare the overall verb complexity between the two groups, offered a single measure which accounted for the pattern of verb production across all levels. It was a value similar to the DSS, but which regarded only verb structures, and was thus a hypothetical level at which each subject performed. The reason why a difference in the variance of the WLS values between the two populations existed was because the adults produced a greater number of verbs in the higher levels of the DSS system. This observation was somewhat expected since the adults once had full command of verb structures at all eight levels of the DSS, whereas

the children had not attained that level of sophistication. Despite the slight difference in the variance, there was no difference in the overall level of verb complexity between the two groups. In addition, the fact that there was no difference in the percentage of verbs produced correctly by these two populations further reinforces the hypothesis of no difference.

For the adult samples, the mean WLS was 2.43; in the child samples it was 1.89. The DSS levels which these scores approximated were levels one and two. Included in Level 1 are uninflected verbs, the copula "is," and the present progressive. Located at Level 2 are the copulas and auxiliaries "am," "are," "was," and "were"; the third person singular present tense marker "s"; regular and irregular past tense verbs; and early-developing infinitives.

These findings coincide with the research, specifically that adults and children with expressive language disorders primarily produce uninflected verbs, progressives, copulas, and auxiliaries in spontaneous speech. Some of the adults and children in this study used the third person singular present tense verb marker "s," regular and irregular past tense verbs, and other, higher level verb structures appropriately, but the highest percentage of correctly produced verbs was found at Level 1, with the next highest being at Level 2 of the DSS in both populations.

The stimulus conditions for the elicitation of the language samples were not kept uniform across subjects because it was felt that this variable did not require rigid controls. As James and Button (1978) note, no differences in DSS or MLU scores were observed for language disordered

children when the stimuli for the utterances were familiar toys versus conversation only. Menyuk (1964b) further supports this observation in her study of normal children of preschool through first grade age.

It is interesting to note that the incidence of apraxia did not have a strong influence on where in the range of scores the DSS values for the adults and the WLS values for both groups fell when the degree of apraxia and location of scores were compared. This conclusion was a bit more difficult to make for the adults because the results of the Apraxia Battery for Adults (Dabul, 1979) could fall into only one of two categories--"mild to moderate" or "severe to profound." However, the only adult who was rated as "severe to profound" in the area of apraxia exhibited mid-range DSS and WLS values. On the Screening Test for Developmental Apraxia of Speech (Blakely, 1980), which was administered to the children, the results indicated the level of probability that a child had apraxia of speech. The three children whose probabilities of having apraxia were greater than 75% (specifically 82%, 99%, 99%), obtained the seventh, fifth, and third lowest WLS values and third, fourth and first lowest DSS values respectively. Therefore, although the incidence of apraxia may have had some influence on the DSS values, no apparent effects were observed on the WLS values.

The apraxia tests administered to the subjects were selected because of their availability to the examiner. Especially with the adults, other tests might have offered more definitive conclusions regarding degrees of apraxia, and possibly could have influenced the comparisons between severity of apraxia and WLS and DSS values. The lack of this information



was a short-coming of the Apraxia Battery for Adults (Dabul, 1979), at least as it was applied in this study.

Two basic therapeutic implications may be gleaned from this investigation. The first is that because the DSS and WLS values are relatively highly correlated, it may be deduced that one's ability to use verb forms correctly is indicative of general facility with grammatical/syntactical structures. Therefore, a language disordered person's skills in producing appropriate verb structures could predict aptness with other grammatical/syntactical forms. Secondly, if one were to analyze an adult's reacquisition and a child's acquisition of language structures, ability to use verb forms possibly could be utilized to monitor and predict general rates and degrees of recovery and acquisition of other grammatical/syntactical structures.

#### Recommendations for Future Research

In order to ensure that the results of this investigation are representative of the general population of adults and children with expressive language disorders, further research with larger numbers of both adults and children is suggested. Research might also be extended into the examination of auditory comprehension, semantic, and pragmatic aspects of the adult with aphasia and child with a language disorder. Additionally, a comparison of the aphasic adult and language disordered child's use of grammatical/syntactical structures other than verb forms might prove fruitful. It is speculated that because DSS and WLS values are highly correlated in this study, proficiency with verb forms is indicative of

ability to use other grammatical/syntactical structures appropriately in spontaneous speech. It would be interesting to determine where these correlations are strongest, or if they are relatively equal across all grammatical/syntactical forms.

Children and adults with language disorders have been regarded and treated largely as separate and distinct populations. Although the term "childhood aphasic" has been used for years, its use also has been debated, primarily because of experiential differences which exist between the adult and the child. Further comparison of these populations appears warranted as a means of acquiring information about the nature of these disorders as well as of acquiring insight into basic language processes.

Table 4  
Developmental Sentence Scoring (DSS) Reweighted Scores  
 (From Lee, 1974, p. 134-135)

Score	<u>Indefinite Pronouns or Noun Modifiers</u>	Score	<u>Personal Pronouns</u>
1	it, this, that	1	1st and 2nd person: I,
2			me, my, mine, you, your(s)
3	A. no, some, all, more, lot(s), one(s), two (etc.), other(s), another	2	3rd person: he, him, his, she, her, hers
	B. something, some- body, someone	3	A. Plurals: we, us, our(s), they, them, their
4	nothing, nobody, none, no one	4	B. these, those
5		5	Reflexives: myself, your- self, himself, herself, itself, themselves
6		6	A. Wh- pronouns: who, which, whose, whom, what, that, how many, how much
7	A. any, anything, anybody, anyone		I know <u>who</u> came. That's <u>what</u> I said.
	B. every, every- thing, every- body, everyone		B. Wh- word + infinitive: I know <u>what</u> to do.
	C. both, few, many, each, several,		

Table 4, continued.

Score	<u>Indefinite Pronouns or Noun Modifiers</u>	Score	<u>Personal Pronouns</u>
	most, least,		I know <u>who(m)</u> to take.
	much, next,	7	(his)own, one, oneself,
	first, last, sec-		whichever, whoever, what-
	ond, (etc.)		ever
8			Take <u>whatever</u> you like.
		8	
	<u>Main Verbs</u>		<u>Secondary Verbs</u>
1	A. Uninflected verb: 1		
	I <u>see</u> you.	2	Five early-developing in-
	B. Copula, is or 's:		finitives:
	It's <u>red</u> .		I wanna <u>see</u> (want <u>to see</u> )
	C. is + verb + ing		I'm gonna <u>see</u> (going <u>to see</u> )
	He <u>is coming</u> .		I gotta <u>see</u> (got <u>to see</u> )
2	A. -s, and -ed:		Lemme /to/ see (let me / <u>to</u> /
	<u>plays, played</u>		<u>see</u> )
	B. irregular past:		Let's /to/ play (let /us <u>to</u> /
	<u>ate, saw</u>		<u>play</u> )
	C. Copula: <u>am, are,</u> 3		Non-complementing infini-
	<u>was, were</u>		tives:
	D. Auxiliary: <u>am, are,</u>		I stopped <u>to play</u> .
	<u>was, were</u>		I'm afraid <u>to look</u> .

Table 4, continued.

Score	Main Verbs	Score	Secondary Verbs
3			It's hard <u>to do</u> that.
4	A. can, will, may + verb: <u>may go</u>	4	Participle, present or past: I see a boy <u>running</u> . I found the toy <u>broken</u> .
	B. Obligatory do + verb: <u>don't go</u>	5	A. Early infinitival complements with differing subjects in kernels: I want you <u>to come</u> . Let him / <u>to</u> / <u>see</u> .
5	C. Emphatic do + verb: I <u>do see</u>		
6	A. could, would, should, might + verb: <u>might come</u> , <u>could be</u>		B. Later infinitival complements: I had <u>to go</u> . I told him <u>to go</u> . I tried <u>to go</u> . He ought <u>to go</u> .
	B. Obligatory does, did + verb		C. Obligatory deletions: Make it / <u>to</u> / <u>go</u> .
	C. Emphatic does, did + verb		D. Infinitive with wh-word: I know what <u>to get</u> . I know how <u>to do</u> it.
7	A. Passive with <u>get</u> , any tense Passive with <u>be</u> , any tense	6 7	Passive infinitival complement: With get:
	B. must, shall + verb:		

Table 4, continued.

Score	Main Verbs	Score	Secondary Verbs
	<u>must come</u>		I have <u>to get dressed</u> .
	C. have + verb +		I don't want <u>to get hurt</u> .
	en: <u>I've eaten</u> .		With be:
	D. have got:		I want <u>to be pulled</u> .
	<u>I've got</u> it.		It's going <u>to be locked</u> .
8	A. have been + verb	8	Gerund:
	+ ing		<u>Swinging</u> is fun.
	had been + verb +		I like <u>fishing</u> .
	ing		He started <u>laughing</u> .
	B. modal + have +		<u>Conjunctions</u>
	verb + en:	1	
	<u>may have eaten</u>	2	
	C. modal + be + verb	3	and
	+ ing:	4	
	<u>could be playing</u>	5	A. but
	D. Other auxiliary		B. so, and so, so that
	combinations:		C. or, if
	<u>should have been</u>	6	because
	<u>sleeping</u>	7	
	<u>Negatives</u>	8	A. where, when, how,
1	it, this, that +		while, whether (or not),
	copula or auxiliary		till, until, unless,

Table 4, continued.

Score	Negatives	Score	Conjunctions
	is, 's, + not:		since, before, after,
	It's <u>not</u> mine.		for, as, as + adjective
	This is <u>not</u> a dog.		+ as, as if, like, that,
	That is <u>not</u> moving.		than
2			I know <u>where</u> you are.
3		B. Obligatory deletions:	
4	can't, don't		I run faster <u>than</u> you
5	isn't, won't		/run/.
6			I'm <u>as big as</u> a man /is
7	All other negatives:		big/.
	A. Uncontracted		It looks <u>like</u> a dog /looks/.
	negatives: I can-	C. Elliptical deletions	
	<u>not</u> go. He has	(score 0):	
	<u>not</u> gone.	That's <u>why</u> /I took it/.	
	B. Pronoun-auxiliary	I know <u>how</u> /I can do it/.	
	or pronoun-copula	D. Wh-words + infinitive:	
	contraction:	I know <u>how</u> to do it.	
	I'm <u>not</u> coming.	I know <u>where</u> to go.	
	He's <u>not</u> here.	<u>Wh-Questions</u>	
	C. Auxiliary-negative 1		
	or copula-negative 2	A. who, what, what + noun:	
	contraction:	<u>Who</u> am I? <u>What</u> is he	

Table 4, continued.

Score	<u>Negatives</u>	Score	<u>Wh-Questions</u>
	He wasn't going.		eating? <u>What</u> <u>book</u> are
	He hasn't been		you reading?
	seen.	B.	where, how many, how much,
	It couldn't be		what....do, what....for
	mine.		<u>Where</u> did it go? <u>How</u>
	They aren't big.		<u>much</u> do you want for it?
8			<u>What</u> is he <u>doing</u> ? <u>What</u>
	<u>Interrogative</u>		is a hammer <u>for</u> ?
	<u>Reversals</u>	3	
1	Reversal of copula:	4	
	<u>Isn't it</u> red?		
	<u>Were they</u> there?	5	when, how, how + adjective
2			<u>When</u> shall I come?
3			<u>How</u> do you do it?
4	Reversal of auxil-	6	
	iary be:	7	why, what if, how come, how
	<u>Is he</u> coming? <u>Isn't</u>		about + gerund
	<u>he</u> coming? <u>Was he</u> go-		<u>Why</u> are you crying?
	ing? <u>Wasn't he</u> going?		<u>What if</u> I won't do it?
5			<u>How come</u> he's crying?
6	A. Obligatory do, does,		<u>How about</u> coming with me?
	did: <u>Do they</u> run?	8	whose, which, which + noun
	<u>Does it</u> bite?		<u>Whose</u> car is that?



Table 4, continued.

Score	<u>Interrogative</u> <u>Reversals</u>	
	<u>Didn't it</u> hurt?	<u>Which book</u> do you want?
	B. Reversal of modal:	
	<u>Can you</u> play?	
	<u>Won't it</u> hurt?	
	<u>Shall I</u> sit down?	
	C. Tag question:	
	It's fun, <u>isn't it</u> ?	
	It isn't fun, <u>is it</u> ?	
7		
8	A. Reversal of auxiliary have:	
	<u>Has he</u> seen you?	
	B. Reversal with two or three auxiliaries:	
	<u>Has he been</u> eating?	
	<u>Couldn't he</u> have waited?	
	<u>Could he</u> have <u>been</u> crying?	
	<u>Wouldn't he</u> have <u>been</u> going?	

Note. Where blank spaces exist next to numbers, no structures are scored.

**Table 5**  
Number of Verbs Produced Correctly at Each DSS Level  
by Adults and Children

	Level							
	1	2	3	4	5	6	7	8
<b>Adult</b>								
1	28	7	1	1	0	0	0	0
2	12	26	3	3	0	1	2	0
3	28	5	2	5	0	0	0	1
4	12	19	3	16	3	0	4	2
5	14	10	1	2	0	0	5	1
6	12	2	0	7	0	0	1	6
<b>Child</b>								
1	41	4	3	4	0	1	0	2
2	19	18	2	4	0	0	0	1
3	18	4	1	5	0	0	0	1
4	20	20	8	7	0	1	0	1
5	13	13	4	3	0	0	0	0
6	24	11	0	2	2	1	1	0
7	11	7	0	2	0	0	0	0
8	9	6	0	0	0	0	0	1

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