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## A comparison of lexical interventions on early grammatical development : does an emphasis on verbs matter?

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NORTHERN ILLINOIS UNIVERSITY

A Comparison of Lexical Interventions on Early Grammatical Development:  
Does an Emphasis on Verbs Matter?

A Thesis Submitted to the

University Honors Program

In Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With University Honors

Department of Communicative Disorders

By Jamie Murphy

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Capstone Approval Page

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Abstract:

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### Abstract

According to the current definition of Specific Language Impairment (SLI), the transition to word combinations can be a troublesome period for children with this impairment. The purpose of this study is to reveal if an emphasis on verbs during intervention really makes a difference in children's progress in language intervention. By examining two types of intervention - one a traditional lexicon therapy without an explicit focus on verbs, the other an intervention that included an explicit focus on facilitating the verb lexicon - this study highlights how intervention with verbs may foster a child's ability to produce word combinations. Two children at risk for SLI were followed longitudinally in this study. Measures included the number of verbs in expressive vocabulary, per parent report, the number of verbs produced in two 20-minute language samples, unique syntactic types, and the number of productive semantic relations. In this case, it appears that a verb-focused approach was more successful in facilitating the transition to early sentences. The implications of verb-focused intervention services are discussed.

## Introduction

Learning language comes quite easily to most children. In fact, most children do not have to put any conscious effort into the amazingly complex task of language acquisition. However not all children come away with the rewards of language during the first few years of life. There are several groups of children who do not obtain language in an effortless fashion like their peer group. It is obvious that impairments in the sensory, motor, and general cognitive systems often lead to significant deficits in children's language development. This is a logical conclusion because these systems support language, thus an impairment in one of these systems often results in an impairment of language. What is less well known is that some children experience significant deficits in language acquisition even without existing deficits in these prerequisite areas.

Children with Specific Language Impairment (SLI) "talk late" and have a delay of early language milestones (Tager-Flusberg & Cooper, 1999). Though some "late talkers" do outgrow delays, some children do not outgrow this stage and remain significantly delayed. These children suffer from primary language impairments with no apparent cause for the immediate problems that occur in their language skills. It is important to note that SLI is not simply a language delay that resolves itself with time. Children with SLI experience difficulty with language and literacy throughout childhood and even into adulthood (Leonard, 1998).

Early indications of SLI include the delayed production of first words, word combinations, and slow vocabulary growth (Conti-Ramsden & Jones, 1997). Specifically,

these children face difficulty with word learning and morpho syntax (Rice, 1991; Tager-Flusberg & Cooper, 1999). This study will examine the transition from single word production to the production of word combinations. In the following literature review, typical children's transition from single words to word combinations will be reviewed. Existing research on the transition in children with SLI will also be discussed. Finally, the role that verbs may play in the transition to word combinations will be examined.

### Literature Review

#### Typical Children's Transition From Single Words to Word Combinations

The transition from single words to word combinations in typical children has been studied and a thorough description of the transition has been produced. The transition to word combinations is important for all children because it takes children rapidly into the realm of adult-like language production.

Ingram has provided a description of a typical child's transition from single words to the production of word combinations (Ingram, 1989). Ingram outlined specific criteria that describe the transition throughout its completion, including what happens prior to the production of the first word combinations. Single words must be produced before word combinations. As a child nears the point of producing word combinations, these single words must be combined into successive single word utterances. A single word utterance requires that a child produce two words pertaining to the same referent in close proximity to each other; the words must have equal stress, intonation, and a slight pause separating

them (Ingram., 1989). Many successive single word utterances resemble word combinations and also begin to resemble adult-like language.

Around 22 months, word combinations begin to increase significantly. At this point, a period of growth also occurs in syntax and grammar. The syntactic spurt occurs when roughly 25 different word combinations have been produced and ends when 100 different word combinations have been produced. After this period, the grammatical spurt occurs when MLU is between 1.5 and 2.0. After MLU has reached 2.0 and 250 different word combinations have been produced, this period of increased growth ends (Ingram., 1989).

Before children produce word combinations there must be a general level of development, including reaching a certain number of items in the lexicon. Another requirement is that a certain number of these items fit into distinct categories such as the categories of nouns and verbs (Marchman. & Bates, 1994). For example, to produce word combinations, a child must have an ample number of nouns and verbs and an ample number of total words in his vocabulary. The total number of words in each category is not absolute, but this concept is generally accepted.

#### The Transition to Word Combinations in Children with SLI

According to the current definition of SLI, the transition to word combinations can be a troublesome period for children with this impairment. In fact, one indication of the presence of SLI is the delayed production of multi-word combinations (Tager-Flusberg & Cooper, 1999). Because of the importance of word combinations in the



movement to adult-like language, some researchers have begun to focus on word combinations in children with SLI.

A study done by Conti-Ramsden and Jones focused on providing a profile of early word combinations in children with SLI (Conti-Ramsden & Jones, 1997). Longitudinal data was collected for three male children with language impairments over a two-year period. The data collected was analyzed and compared to a database of normally developing children. All the children had normal hearing, an IQ within one standard deviation of the mean, and low average comprehension ability. However, all three had eventful birthing histories and two of the children also had motor milestone delays. Therefore, it is important to note that that these children do not neatly fit into other researchers' definitions of SLI.

Mother and child interactions were videotaped in the homes of the children approximately every three months for the duration of the study. Among the analyses, Conti-Ramsden and Jones examined how verbs were used in word combinations. Key findings included that, "children with SLI used verbs less frequently, nouns more frequently, and were more input-dependent than their MLU-matched peers (p. 1298)". Though the total number of words and the number of different words in each child's vocabulary was similar in both groups of children, the study specifically revealed a deficiency in verb usage by the children with SLI. This finding led Conti-Ramsden and Jones to suggest that the size and complexity of the verb vocabulary is of immense importance to the later language development of children with SLI.

Olswang and her colleagues conducted an important study exploring the relationship between children's verb lexicons and their subsequent transition to word

combinations (Olswang, Long, & Fletcher, 1997). The purpose of this study was to examine lexical development in children with Specific Expressive Language Impairment (SELI) as the children were moving from single word production to multi-word productions. Specifically, 21 children with SELI were observed for nine weeks to examine lexical development and the emergence of word combinations.

The children ranged between 31 and 36 months and had average cognitive and receptive language abilities. All of the children in the study had low expressive language ability, with MLUs ranging between 1.0-1.34 at the beginning of the study. Cognitive and comprehension abilities suggested that all the children should have been producing word combinations. The study consisted of three phases, each being three weeks in length: baseline, treatment, and withdrawal. Three children were used as controls, and did not receive treatment. The remaining 17 children received treatment three times a week for 45 minutes. The treatment sessions were designed to assist the children in production of (agent + action or possessor + possession) semantic relations. Three 30-minute language samples were taken throughout each phase of the study to collect data regarding word combinations, one during each week of the study.

The results of this study revealed a relationship between the size of vocabulary during the baseline phase and the resulting MLU growth during the later phases. The composition of the vocabulary during the baseline phase was also noted as of particular importance to the production of word combinations. Findings on the use of verbs relating to the production of word combinations were of particular interest.

The results indicated that a diverse verb vocabulary was related to children's production of word combinations. Specifically, intransitive and ditransitive verbs were

related to the most positive change in children's abilities. Olswang and her colleagues concluded, "the children who moved more successfully on to the production of word combinations exhibited greater quantity and variety in their verb repertoires" (p. 29),

Brinkmeier provided a follow-up study that reexamined the variables studied in Olswang's research (Brinkmeier, 2002). This study looked specifically at lexicon size, verb lexicon size, and verb lexicon composition in relation to the production of word combinations. To look at these variables, information was collected on nine children from an archival database. All nine children were at risk for SLI, had at least 50 spoken words in their vocabularies per parent report, had MLUs of less than 1.50 and one standard deviation below the mean, and produced fewer than 40 unique syntactic types in 40-minute language samples. The data were analyzed at two measurement points, approximately three months apart, for each child.

The results of Brinkmeier's study were generally compatible with the findings of Olswang et al. (1997). Although Brinkmeier did not find a significant relationship between the total or verb lexicon size at the initial measurement point and the production of word combinations, the relationship between the composition of the verb lexicon and the later production of word combinations was found to be significant. Again, the presence of intransitive and ditransitive verbs in the children's verb lexicons was related to the most positive change in children's ability to produce word combinations three months later.

## How Might Verbs Make a Difference?

Evidence from Conti-Ramsden and Jones (1997), Olswang et al. (1997), and Brinkmeier (2002) indicates that verbs play a very important role in the development of language. Conti-Ramsden and Jones stated that, "many researchers believe that verbs play a particularly important part in language learning and use since the conceptual roles specified by verbs may be said to provide a framework for organizing other word class members into appropriate linguistic expressions" (p. 1298). In fact, complete sentences cannot exist without the verb and thus verbs play a critical role in the transition to adult-like early sentences.

These studies also indicated that children with SLI use verbs differently than children with normal language development. Additional research has also pointed to this conclusion. Children with SLI have been shown to have fewer different verbs than their age-matched peers, as well as their MLU-matched peers (Watkins, Rice, & Moltz, 1993). Because of the importance of verbs in the transition to word combinations it is crucial that researchers continue to investigate how verbs are used among children with SLI. It is also important that researchers examine the intervention services being provided to these children. It would seem reasonable to implement verb-focused interventions in light of these findings; however, to develop best practices, the empirical evidence for verb-focused intervention strategies must be evaluated.

The purpose of the current study is to reveal if an emphasis on verbs during intervention really makes a difference in children's progress in language intervention.

Specifically, this study will examine whether an emphasis on verb acquisition facilitates the transition to word combinations for one child at risk for SLI. This study will use measures based upon the Brinkmeier (2002) study to examine the productivity of word combinations. By examining two types of intervention - one a traditional lexicon therapy without an explicit focus on verbs, the other an intervention that included an explicit focus on facilitating the verb lexicon - this study will highlight how intervention with verbs may foster a child's ability to produce word combinations.

## Methodology

### Archival Database :

The two participants in this study were selected from an archival database of late-talking children or children at risk for SLI (Hadley, 1999). This database consists of 2-year-olds who live in DeKalb County, Illinois. The children in the database have (a) no history of neurological, emotional, or behavioral impairments, (b) passed a hearing screening, (c) passed an oral-motor screening, and (d) acquired English as their only language.

The data used in this study were obtained from the archival database. Measures of the children's language development were available at three-month intervals, beginning with the time of initial identification. At the time of initial identification and at 36 months of age, comprehensive speech and language evaluations were completed. These evaluations included measures of language comprehension and production, measures of spoken vocabulary, word combinations, and grammatical complexity from the MacArthur Communicative Development Inventory (CDI; Fenson et al., 1993). Detailed child and family histories were obtained. Finally, audio- and video-recordings of two 20-minute parent-child interactions were obtained spaced no more than 2 weeks apart. During the intervening measurement points at 27-, 30-, and 33-months, two 20-minute samples of parent-child interaction were again collected, as well as parent report of vocabulary size and progress in sentence length and complexity from the COL

All parent-child interactions were transcribed using Systematic Analysis of Language Transcripts (SALT) software (Miller & Chapman, 2000). From these transcripts, the primary measures of words used and word combinations produced were obtained. Thus, the data used for this study consisted mainly of the archival language transcripts and parent reports on the CD!.

### Participants

For this study two male children were selected from the archival database. Both had received early intervention services at some time between the ages of 2 and 3. At the time of the initial evaluation, both children met the following selection criteria: (a) a language delay of unknown origin (no neurological damage, mental retardation, hearing impairment, autism, etc.), (b) between 24 to 30 months of age, (c) English as their only language, (d) fewer than 100 words in the total vocabulary, and (e) fewer than 20 verbs per parent report on the CD!.

The first child, 1122, received early intervention services from a local private practitioner. Given the family history of language learning difficulties, his parents pursued services at a very young age. Intervention was initiated at 17 months of age and continued for the duration of the research program. Among the initial therapy goals was a focus on increasing 1122's expressive vocabulary, although no specific targets were reported during the course of the research study. Additionally, the clinician perceived a need to improve the child's oral motor strength and instructed the parents on oral motor exercises they could use daily at home.

Measures for the current study were obtained from the child's initial evaluation at 24 months, and follow-up sessions at 27,30, and 33 months. At the initial evaluation, the child met all selection criteria. He had a language delay of unknown origin, and parent reports revealed no concerns with motor, cognitive, social, or hearing abilities. Because of repeated infections beginning in April 2001, ear tubes were placed during September, 2001. According to parent report on the COI, 1122 had 96 words in total vocabulary, and eight verbs, at 24 months of age. He was reported to have begun combining words, at 22 months of age.

The second child, 1123, was identified at a later age, and received services for only a 2 month period between 31 and 33 months of age with specific verbs as lexical targets in therapy. The child's initial evaluation was at 27 months, and further data collections were obtained at 30 and 33 months. At the initial evaluation the child met all selection criteria. He had a language delay of unknown origin, and parent reports revealed no concerns with motor, cognitive, social, or hearing abilities. His expressive vocabulary, on the COI was reported to be 76 words. Of these, only four words were verbs. The child had not yet begun to combine words.

### Intervention

The focus of this study was to reveal if an emphasis on verbs in therapy really matters. Therefore, a description of each child's intervention is provided. The differences are of utmost importance.



1122's lexical intervention could be characterized as a traditional general stimulation program. His intervention began at 17 months of age and ran throughout the data collection period. 1122 received intervention once a week for 60 minutes with the clinician working both directly with him and educating his parents about strategies to use and activities to carry over into the home environment. Goals included: to achieve age appropriate expressive language, and to exaggerate speech sounds through play and shared book reading. The parent reported the following as examples of activities used in therapy sessions: oral motor movement practice, target sound practice in different positions of words, and sound play using cassette tapes that emphasized target sounds. Despite the parents' desire for 1122 to increase his expressive vocabulary, they were not aware of specific lexical targets. In other words, general language stimulation procedures were in place, rather than focused stimulation on specific targets. The lack of specific lexical targets, especially the lack of any focus on verbs during the entire intervention period, is particularly relevant to this study.

In contrast, 1123 began therapy at 31 months of age and received services from the NIU Speech and Hearing Clinic for approximately two months. Intervention took place once a week for 50 minutes. Again, intervention included both direct and indirect forms consistent with the family-based treatment approach frequently utilized in the Clinic. The initial objective was to increase the child's vocabulary. Further information was obtained about 1123's intervention through the Speech and Hearing Clinic's record keeping. The treatment plan for 1123 included using developmentally appropriate thematically-based play activities designed to target expansion of the verb vocabulary and to aid in the production of very simple sentences (e.g. kitty sleep; pop bubble). More

specific objectives included: (a) acquiring 50 new verbs as measured by parent report, (b) increasing the frequency of spontaneously produced (pro)noun + verb and (pro)noun word combinations to 20 productions per session, and (c) increasing Mean Length of Utterance (MLU) to 2.50 as measured by spontaneous language sampling. The role of verbs in 1123's intervention is of primary interest to this study.

### Procedures

For the current study, three measurement points from the larger longitudinal study were used to obtain data for 1123, and four measurement points were used to obtain data for 1122. For 1123, these points include the initial evaluation period and two follow up visits. For 1122 these points include the initial evaluation and three follow up visits. Data was collected for one additional point for 1122 to ensure that age differences between the children did not play a role in the outcome of the study. The measurement points will be referred to as Time 1 (initial evaluation), Time 2, Time 3, and Time 4. The ages that correspond for both children at each point are provided in Table 1. As can be seen in Table 1, 1122 was 33 months of age at T4 whereas 1123 was 33 months at T3. Each measurement point for both children included two 20-minute parent-child interactions for purposes of assessing spontaneous language production. In addition, the CDI vocabulary inventory was updated at each measurement point during data collection.

Table 1

Corresponding ages at measurement points

<i>Participant</i>	<i>Time 1 Initial Evaluation</i>	<i>Time 2</i>	<i>Time 3</i>	<i>Time 4</i>
1122	24mos	27mos	30mos	33 mos
1123	27mos	30mos	33 mos	-----

## Measures

Four measures were used to analyze data for both children. These measures will be discussed in this section. The first measure was the number of verbs in expressive vocabulary, per parent report (Fensen et al, 1993). This measure used the COI parent report at each measurement point. The number of total words in the child's vocabulary was manually counted to obtain a raw score. In addition, the reported number of verbs in section fourteen of the COI was also counted. This revealed how many words and verbs the parent had observed the child produce at home.

The next measure was the number of verbs produced in the two 20-minute language samples (Olswang et al., 1997). All language transcripts had previously been transcribed using the Systematic Analysis of Language Transcripts (SALT) software (Miller & Chapman, 2000). Using this software, lists of the total number of different verbs produced during the 20-minute language samples were calculated. This measure

provided another way to see how each child was using verbs in an activity of daily living, in this case: play.

The third measure used for this study was an adaptation of unique syntactic types (UST; Hadley, 1999). First, all USTs were identified based upon unique combinations of two or more words. Two-word combinations were excluded if they contained a word without syntactic status. Words without syntactic status included words that functioned as greetings, names, etc. The modification in the current study followed Brinkmeier (2002) and included only those unique combinations that also included a verb. After culling all USTs with verbs, with computerized searches, the resulting list was analyzed by hand to ensure all utterances fit the criteria. This measure was used to identify differences in how children were using the verbs from their lexicons to form combinations.

The last measure used in this study was the number of productive semantic relations (Brinkmeier, 2002). Using Brinkmeier's coding system, all semantic relations were analyzed for productivity. This included coding each UST with a verb generated by the previous analysis. The coding system begins with an analysis of each verb and how it was used in the combination. First, the verb is identified as an action verb or state verb. After this determination, the subject of the UST is considered. If the subject is present, it is further broken down. For state verbs, the expressed subject is determined to be either an experiencer or theme. For action verbs, the expressed subject is determined to be either an actor or theme. For operational definitions and explanations of each coding decision, see Appendix C and Appendix D. Transcripts and archival videotapes were used to ensure the coding was accurate when the context of the verb usage was unclear.

This method helped determine how the children were using the verbs they had in their vocabulary. It showed how the children were using verbs productively in the early word combinations they were using. To be considered a productive semantic relation, there must have been at least five unique combinations of expressed subject-verb combinations (Lahey, 1998). This measure was used to show if each child had mastered the specific types of productions at each measurement point.

### Reliability

The transcripts used in this study, being part of a larger longitudinal study, had been checked for reliability prior to the beginning of the present study. Another researcher, who is skilled in the procedures of language analysis, checked the additional measures conducted for the present study. Any disagreements in coding were discussed until consensus was obtained between both parties. In some cases, reviewing the archival videotapes provided the clarification needed to resolve these disagreements.

## Results.

The purpose of this study was to determine if a focus on verbs in lexical intervention would result in differences in the transition to early word combinations. The results are based upon the four measures discussed previously, pre- and post-treatment for 1123. This progress is compared to measures obtained for 1122, the standard practice control case, for the period corresponding to matched language abilities with 1123, through 33 months of age. T1 reflects initial evaluation for both, T2 reflects pre-intervention for 1123~T3 reflects post-intervention for 1123. The changes between these data points are of the greatest interest to the current study. However, because 1122 was 3 months younger at the time of the initial evaluation, T4 has been included for 1122 to compensate for this difference in age. Thus, comparison between T3 for 1123 and T4 for 1122 constitute an age-matched comparison. Each measure will be discussed in detail in the following section and data for both children at all points will be presented. The contrast between the two children and the differences in their intervention strategies will be highlighted at the conclusion of the results.

### Expressive Vocabulary, Per Parent Report

The number of verbs in the children's expressive vocabularies is presented in Table 2 and Figure 1. At the beginning of 1123's intervention, both children had already begun to acquire a verb vocabulary, and the size of their vocabularies was quite similar. Although the expressive verb vocabularies were initially quite small, 1122 had twice as

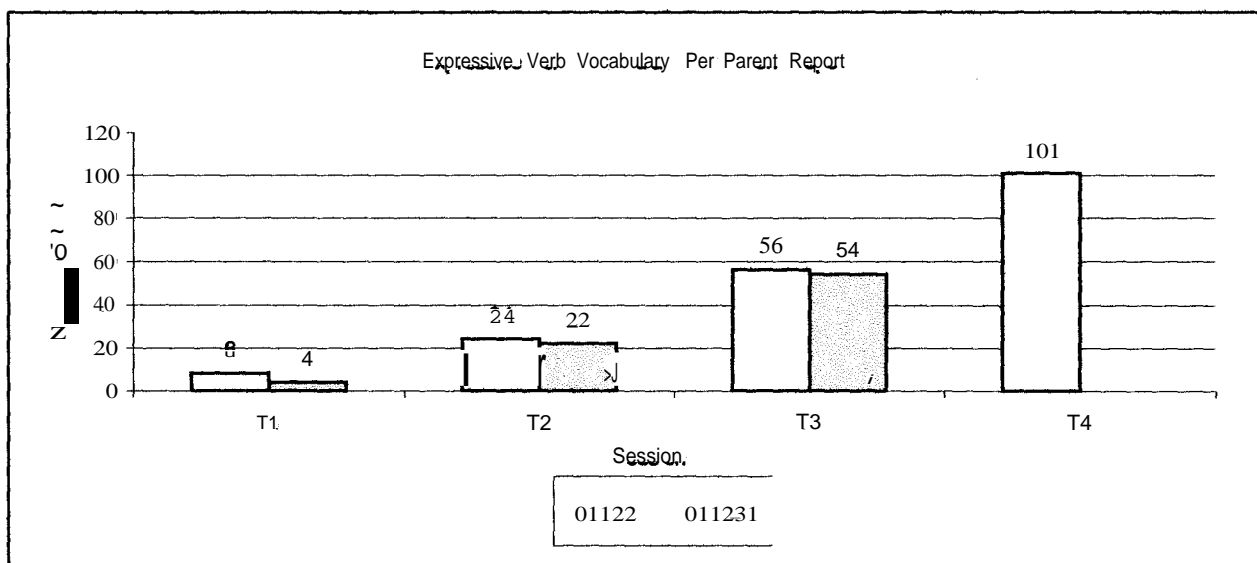
many verbs, as 1123 (cf. 8 vs. 4). For a complete list of the specific verbs reported for each participant, refer to Appendix A and Appendix B.

Table 2

## Expressive Verb Vocabulary Per Parent Report

<i>PARTICIPANT</i>	<i>T1</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>
1122	8	24	56	101
1123	4	22	54	-----

Figure 1



The total number of words in the expressive vocabulary for each child is also presented from the first three data collection points. The total expressive vocabulary for

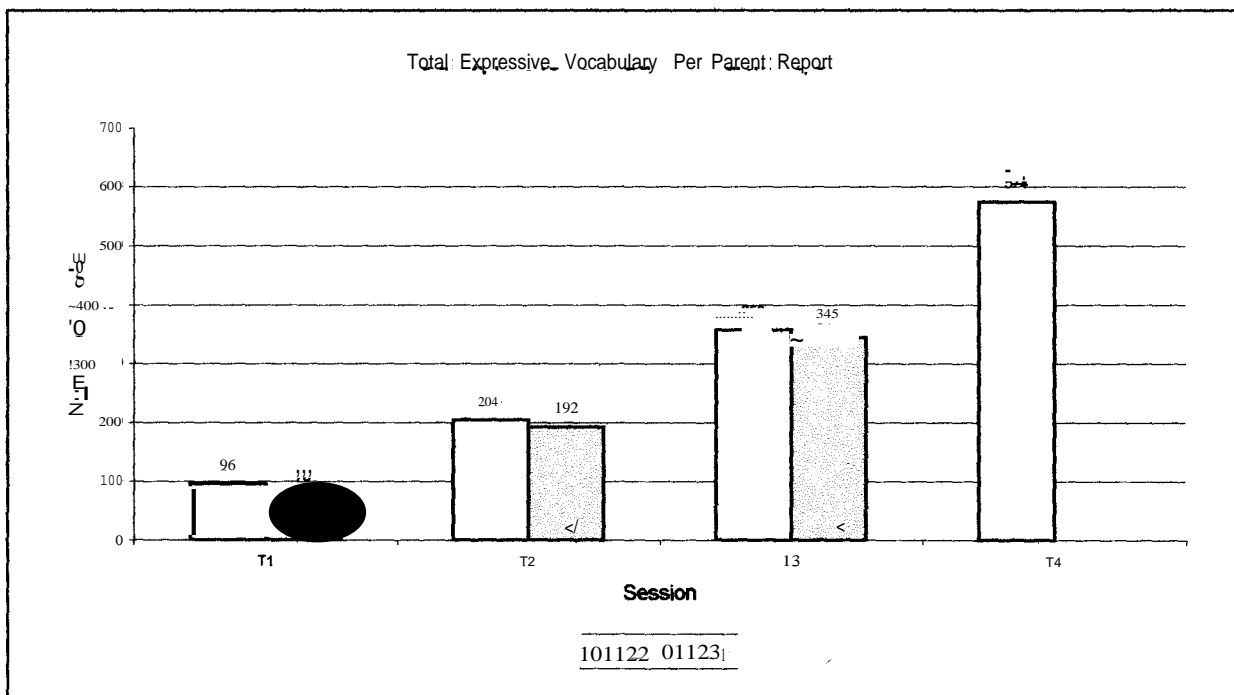
each child is found below in Table 3 and Figure 2. Again, the data shows that both 1122 and 1123 have very similar expressive vocabularies available to them.

Table 3

Total Expressive Vocabulary Per Parent Report

<i>Participant</i>	<i>T1</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>
1122	96	204	358	574
1123	76	192	345	-----

Figure 2





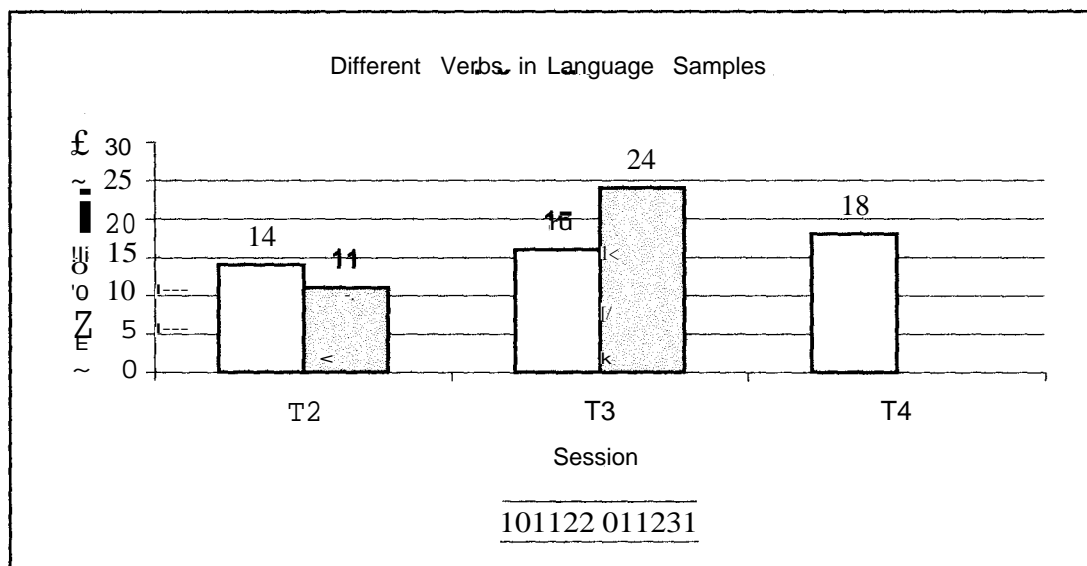
### The Number of Verbs Produced in Spontaneous Language Samples

The number of different verbs produced by each child in the total 40-minute of language sampling (two 20-minute language samples at each measurement point) is presented in Table 4 and Figure 3. Both children have roughly the same number of verbs and total vocabulary, according to parent report at T2. The growth in verbs as recorded through language samplings is shown below in Table 4 and Figure 3.

Table 4

Different Verbs in Language Samples			
<i>Participant</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>
1122	14	16	18
1123	11	24	-----

Figure 3



It should be noted that 1122 showed only a gradual increase in the production of different verbs in the language sample from over a 6 month interval, whereas 1123's use of different verbs increased from 11 to 24 during a 3-month time period, reflecting the brief 2-month period during which the verb-focused intervention was taking place. Recall that 1122 received therapy throughout this entire data collection period but the therapy did not address specific lexical targets. Finally, it is important to point out the age-based comparison at 33 months, 1123 was producing more different verbs in his language samples compared to 1122 despite a dramatic difference in their total reported vocabulary size (cf. 24/345 vs. 18/574).

#### Unique Syntactic Types with Verbs

USTs were calculated according to Hadley's (1999) criteria and were found at T2, T3, and T4 data periods for 1122. For 1123, T2 and T3 data periods were calculated. The number of USTs with verbs for each child is listed below in Table 5.

Table 5

USTs with Verbs

<i>Participant</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>
1122	3	11	25
1123	7	25	----

The significance of this data lies in the obvious jump in 1123's score between T2 and T3. Once again, this jump came directly after intervention services were provided

began for participant 1123. 1122 was receiving services throughout the period and only equaled 1123's score at T4. Again, it is important to point out that 1123 had achieved equivalent diversity of verb combinations with a much smaller total vocabulary than 1122. A list of USTs with verbs, following SALT transcription guidelines for each child, is provided in Appendix D.

### Productive Semantic Relations

To further analyze each child's use of verbs, the productive semantic relations of each language transcription were calculated according to Brinkmeier's (2002) criteria. Table 6 shows the distribution of the verbs as they were produced for 1122 and 1123. Productive semantic relations (at least five unique combinations) are expressed in bold with an asterisk for emphasis. Semantic relations without a subject (null) are provided merely for descriptive purposes, but were not considered in for purposes of the productivity analyses.

Table 6

#### Productive Semantic Relations

Categories"	1122-T2	1122- T3	1122-T4	1123 -T2	1123 -T3
NA	1	4	10	2	4
AA	----	3	S	1	7
TA	----	<b>I</b>	----	----	----
NS	1	2	4	3	7
ES	1	1	2	1	4
TS	----	----	----	----	----

"Categories include: Null Action (NA), Actor Action (AA), Theme Action (TA), Null State (NS), Experiencer State (ES), and Theme State (TS)

\* Productive Semantic Relations expressed in bold

\* Unexpressed subjects may have omissions of obligatory subjects (e.g. \*NP move through it) or nonobligatory as in imperatives (e.g. put this right there)

The data represented in Table 6 shows that neither child had any productive relations at T2. However, 3 months later participant 1123 had achieved productive use of the actor-action relation, whereas this same accomplishment took 1122 6 months. It is again interesting to note that 1123 achieved a productive relation after receiving intervention services; Though 1122 had also been receiving intervention services he did not reach a point of productivity until T4, though he had been receiving treatment prior to T1. Again, the age-matched comparison was of interest. Both children demonstrated a productive actor-action relation at 33 months of age. However, it is again important to note that 1123 appeared able to use his smaller verb vocabulary in more different sentence structures than his peer with the much larger verb vocabulary,

#### Summary of Progress

From these results it is clear that 1122 and 1123 began the study at similar language abilities. Throughout the study, parent reports revealed that both children were capable of producing a similar verb and overall total vocabulary. At T2, both children produced a similar number of different verbs in the language samples neither child had achieved productive semantic relations, and the number of USTs with verbs was relatively similar. Between T2 and T3 though, 1123 made important and noticeable increases. His number of different verbs produced in the language samples doubled, the number of USTs with verbs tripled, and he also demonstrated one productive semantic relation (i.e., actor-action). Although 1123 improved across a number of measures, similar improvements were not observed for 1122. He produced only two more verbs at

T3 than at T2, and still hadn't achieved any productive semantic relations at T3. 1122's greatest change was observed in the frequency of USTs with verbs (cf. 3 to 11). Yet, given his comparable verb vocabulary, based on parent report, the limited use of word combinations with verbs suggests these combinations were an area of relative difficulty for him. By T4, 1122 managed to achieve one productive semantic relation (i.e., actor-action). His USTs with verbs also increased (cf. 11 to 25), though again he only produced only 2 more different verbs during language samples at T4 than at T3. Again, given his size of verb vocabulary, based on parent report, spontaneous use of verbs, especially in simple sentences remains an area of clear weakness for 1122.

With these data trends in mind, looking at the differences in intervention methods is useful. As discussed in the participant section of the methodology, 1122 received a traditional type of lexical intervention whereas 1123 received intervention with specific verbs as lexical targets. This relationship between the outcome of months of intervention services and type of intervention provided will be discussed in the following section.

## Discussion

The purpose of this study was to examine the role of verbs in facilitating children's transition to word combinations. The study compared two children at the very beginning of this transition. Initially, 1122 and 1123 were similar in their capabilities for language and word productions. Parent reports revealed that, throughout the study, both children had similar vocabulary bases to work with. However, their intervention experiences were quite different. One child had been in standard practice intervention services since 17 months of age, throughout the duration of this study. The intervention involved general stimulation as the primary lexical intervention. Thus, at the conclusion of this study, 1122 had received a total of 15 months of early intervention. The second child was in intervention a brief time, for only 2 months. However, this intervention focused explicitly on lexical targets, including verbs.

Analyses of the children's transition to word combinations indicated that 1123, the child receiving the verb-focused intervention, made greater progress in the transition to word combinations, despite an intervention of much briefer duration. These findings indicate that a focus on verbs may indeed facilitate the transition to word combinations for children at risk for SLI.

In addition, several qualitative differences were observed between the two children upon analyzing the language transcripts. 1122's language throughout the study contained only pronoun subjects (e.g. I, me), while 1123 began to use elaborated subjects (e.g. that girl, the helicopter, the car). Differences in verb diversity were also observed in the language transcripts. At T3 1122 used 16 different verbs in language sampling, whereas 1123 used 24 different verbs. At T4, 1122 still only used 18 different verbs,

during language sampling. Verb morphology differences also existed between the two children. 1123 was moving toward productivity of progressive -ing (i.e. I am parking; helicopter coming; me working) at T3. In contrast, 1122 only showed one instance of using such a morphological marker by T4 (i.e. \*NP making).

Though the verb usage shown by 1122 and 1123 is varied, recall their initial abilities were quite similar as reflected by both parent report and language samples (recall Tables 2 & 4, Figures 1 & 3). The results indicate that though these two children had similar vocabulary inventories, they performed quite differently when verbs were actually used in spontaneous language production 3 months later. As demonstrated here, children of similar vocabulary knowledge may have quite different abilities to actually use the vocabulary in language production. In addition, this study demonstrated that verb vocabulary abilities are important for the transition to word combinations, but that this knowledge may not be sufficient for effortless transitions to early sentence production.

### Clinical Implications

The importance of verbs in intervention demands clinical attention. To best serve children with SLI, the most beneficial intervention services must be emphasized. Most intervention services do not currently focus on verbs. Generally, a typical lexical therapy is provided for children with SLI. This type of therapy focuses on teaching children nouns, or in other words, teaching them to name objects. After seeing the difference in outcomes between the two children in this study, one must consider what the best practice is for children with SLI. In this case, it appears that a verb-focused approach

was more successful in facilitating the transition to early sentences. Verb-focused intervention services have great potential for practice. As demonstrated in this study, it appears that verbs play a crucial role in the development of word combinations and can specifically aid children with SLI to make productive combinations. However, it appears that the diversity of verbs children use in spontaneous language is more critical than a general inventory of all verbs a child may know or have used at some prior time. Further research on this topic may lead to increased empirical evidence that verb-focused intervention is crucial for children with SLI. This empirical evidence is a critical step towards providing children with SLI the best possible intervention services.

#### Limitations of the Current Study and Directions for Future Research

To best serve future clients, further research must be conducted. The present study has served as a pilot study to explore the outcome of verb-focused intervention on a small scale. Limitations included the small scale of the study and the age difference between the subjects. Although steps were taken to ensure that the small size and age differences did not play a role in the outcome of the study, these should still be considered as possible limitations. To generalize the results of the study, future studies need to be conducted to further analyze the role of verbs in word combinations. The results of this study indicate the importance of the role of verbs in the transition period between single words to multiple word combinations. The focus of therapy is crucial to the success of a child's intervention outcome. Thus, future studies are needed to further analyze the role of verbs in the development of word combinations for both children



developing typically and children with SLI. Further research also needs to be conducted specifically, on how verbs can be best highlighted during intervention, for optimal outcomes in therapy.

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Appendix A  
1122 MCDI verbs  
Verbs reported by parent inventory

<i>24 months</i>	<i>27 months</i>	<i>30 months</i>	<i>33 months</i>
clap	blow	blow	bite
close	build	build	hide
cut	clap	catch	spill
drink	close	clap	blow
get	cut	close	hit
go	drink	cut	hold
see	dump	draw	bring
stop	get	drink	hug
	go	drive	hurry
	help	drop	stop
	hug	eat	bump
	Jump	fall	buy
	kiss	feed	carry
	open	find	kiss
	play	fit	knock
	pull	get	take
	push	give	lick
	read	go	talk
	see	have	taste
	stay	help	clean
	stop	hide	listen
	sweep	hit	look
	wait	hug	love
	wash	Jump	make
		kick	cover
		kiss	cry
		like	pick
		love	play
		open	draw
		play	pour
		pull	drink
		push	pull
		put	drive
		read	push
		ride	put
		run	dry
		see	read
			ride
			rip
			run
			say
			see
			shake
			share
			show
			sing
			sit
			skate
			sleep
			slide
			smile

Appendix B  
 1123 - MCDI verbs  
 Verbs reported by parent inventory

*27 months*

eat  
 go  
 help  
 stop

*30 months*

blow  
 break  
 bump  
 clean  
 cry  
 draw  
 drink  
 drive  
 drop  
 eat  
 go  
 help  
 hit  
 paint  
 play  
 pull  
 run  
 shake  
 stop  
 swim  
 throw  
 work

*33 months*

bite read  
 blow ride  
 break run  
 build shake  
 bump share  
 buy slide  
 catch splash  
 clap stop  
 clean swim  
 cry swing  
 draw throw  
 drink tickle  
 drive walk  
 drop work  
 dry  
 dump  
 eat  
 fall  
 fit  
 fix  
 go  
 hate  
 help  
 hide  
 hit  
 jump  
 kick  
 lick  
 open  
 paint  
 play  
 pour  
 pretend  
 pull  
 push

## Appendix C

### Semantic Relationship Classification Brinkmeier (2002, pp. 73-77)

#### (A) Verb Class

##### State Class

##### Action Class

(B) Null subject (B) Expressed subject

(B) Null subject (B) Expressed subject

(C) Experiencer (C) Theme

(C) Actor (C) Theme

A. Determining State vs. Action: Does the verb refer to a condition or an event?

State verbs refer to the condition of someone or something and can be distinguished from action verbs, which refer to some event by a number of morphological criteria when describing states or actions referring to the present moment. For the purpose of the present study, USTs containing embedded verbs (e.g., *It's hard get in.*) were not included in the state versus action coding system, but rather were coded as "other."

To refer to the condition of someone or something at the present moment, state verbs appear with simple present tense morphology (e.g., *it fits*, *he wants that*), but do not appear in the present progressive (e.g., *\*he is wanting that*). In contrast, action verbs appear in the present progressive (e.g., *she is walking*).

Importantly, when action verbs appear in utterances such as *she walks* or *bunny hops*, the verbs do not refer to the present moment, but rather take on a generic or habitual meaning.

Tests to determine if a verb is a state verb or action verb

1. Can the verb appear in the following:

Right now he/it *verbs*.

*States:* Right now he needs a nap/she has a doll.

*Actions:* Right now he \*sleeps/\*jumps.

2. Can the verb appear in the following:

Right now he/it *is verbing*.

*Actions:* Right now he is sleeping/jumping.

*States:* \*Right now he is needing a nap/\*she is having a doll.

3. Can the verb appear as an answer to:

What's he/it *doing*?

*Actions:* sleeping/jumping/eating.

*States:* \*needing a nap/\*having a doll

- B. Determining Null vs. Expressed Subject: Is the subject of the UST absent or present?
- C. Determining Experiencer vs. Theme: Is the expressed subject of the state verb animate or inanimate? The semantic role of experiencer was operationally defined as a person who experiences some psychological state or a change in psychological state. The semantic role of theme was operationally defined as an entity in a specific location or an entity that is undergoing a change in location.
- D. Determining Actor vs. Theme: Is the expressed subject of the action verb animate or inanimate? The semantic role of actor was operationally defined as a person or