International Journal of Interdisciplinary and Multidisciplinary Research (IJIMR)

ISSN 2456–4567

Word Formation Deficits in Children with Specific Language Impairment

Etim, Victoria Enefiok
Department of Linguistics and Nigerian Languages
University of Calabar

Abstract
The study on the word formation deficits in children with specific language impairment (SLI) was aimed at identifying children with specific language impairment who are affected in the process of word formation. It is very common to have children with specific language impairment being confronted with the challenge of word formation. This study therefore, sets out to investigate the deficits in simple past inflections and plural morphemes as they are manifested in children with specific language impairment (CWSLI) in Hillcrest Junior Special Schoo, Calabar, Cross River Sate, Nigeria. It also sought to examine the severity of the disorders in order to provide data as the first step towards a critical intervention. The study involved 20 CWSLI between the ages of 5 and 17 years from Hillcrest Junior special school in Calabar. 10 boys and 10 girls. Validated Word Structure (WS) assessment comprising 10 pictures and 10 sentences completion tasks as well as reliability test re-test of mean length of utterance (MLU) were used to collect data for the study. The children were made to repeat the story contained in a passage of 100 utterances which were recorded and eventually transcribed for analysis using Systematic Analysis of Language Transcript (SALT) Software. The theory of word-based model was adopted for the descriptive analysis. From the findings, the study confirmed that there is alarming deficits of word formation in CWSLI within the study area. It was revealed that between 65% and 70% of errors were found in the utterances of each of the 20 subjects examined. It also revealed that the value of mean length of utterance in all the subjects was below 5.0. It was therefore recommended that parents, teachers and caregivers should pay attention to the language development of their wards so as to observe any deviation during the development. Also, recommended that a state/nation-wide survey should be carried out to have national statistics of CWSLI with word formation deficits and develop intervention strategies for effective therapy to remediate the disorder.

Key words: 1 Calabar,2 Mean length of utterance,3 specific language impairment, word formation,4 word structure**.**

Introduction

Like adult, new words are coined by children at an early age irrespective of whatever language they are exposed to. Marshalli,(2013), Fenson, Dale, Reznick, Bates, Thal, Pethick (1994) observe that the average English-speaking child produces first word at around 10-12 months of age and at 16 months, the child

possesses a productive lexicon of about 40 words and has an understanding of about 150 words. However, children with morphological deficits experience difficulty learning and using the rules that govern word formation.

Morphological deficits is one of the disorders experienced by children with Specific Language Impairment, (henceforth SLI). Bavin (2009) observes that as the children with SLI develop especially during their pre-school and kindergarten years, morphosyntax is their special weak area and as they gradually gain sufficient ability to participate in multi-conversational discussion and narrative skills this shows up as area of weakness. Leonard (2014) also put it that grammatical morphology represents an area of special difficulty for children with SLI. It is also important to observe that several studies and investigations have proven as well as indicated that in English, grammatical morphology is a weak area in children with SLI (cf Cleave and Rice, 1997; Hadley and Rice, 1996; Johnston and Kamhi, 1984; Loeb and Leonard, 1991; Marchman, Wulfeck, and Ellis Weismer, 1999; Oetting and Horohov, 1997; Bishop and Leonard, 2014). At age five, a composite measure of tense-related morphemes differentiate English-speaking children with the disorder of SLI from that of the typically developing children (TDC) with a sensitivity of 97% and a specificity of 98%. (Rice 1998)

SLI according to Heather, Lely and Christian (2000) in Menyuk (1964) is a heterogeneous disorder of language acquisition in children who have no other apparent cognitive, social or neurological deficit which can obviously account for their impairment. Studies have shown that a child with SLI in which regular inflection morphology is impaired, would predict that they will produce regular plural –s inside compounds eg (*rats-eater), in contrast to children developing normally. (Ulman and Gopnick 1994; 1999; Vander lely and Ullman, 1996. According to Hannus, Kauppila and Launonen (2016) children with SLI can be diagnosed as F80.1 or F80.2 of which diagnoses F80.2 is an expressive language disorder whereby the child's ability to use expressive spoken language is markedly below the appropriate level for the mental age, but in which language comprehension is within normal limits.

SLI is a disorder of language acquisition in the absence of obvious explanatory factors such as hearing impairment, autism, frank neurological abnormalities or genomic syndromes. (Kornilov, Rakhlin and Grigorenko, 2012). The main aim of studying the language of SLI is to describe which aspect of the language are impaired and are spared in order to provide a basis for developing effective intervention strategies as well as understand the cognitive structure of the human oral and written language capacity in general, as part of our global understanding of human cognition.

Leonard, McGregor and Allen (1992) observe that the auditory perceptual impairment which is claimed to be one of the causes of SLI can possibly cause problems in the perception of morphemes such as, -ed and –s which have 'low perceptual salience'. Therefore, children with SLI require additional processing resources to perceive and produce such morphemes which Leonard (1998) noted that it causes further problems in 'building morphological paradigms'. However, the particular interest of this study is to investigate the morphological representation of regular inflections – simple past and plural morphemes in children with SLI in Hillcrest Special School, Calabar. It is important as it hopes to establish an intervention that will include collaboration between Parents and Clinicians as it will have an effect on the daily living of the children.

Theoretical framework

The theoretical framework used for this study is the word-based model.

The Word-based model is a hypothesis proposed in Arnoff (1976) which says that all regular word formation processes are word-based. A new word is formed by applying a regular rule to a single already existing word. Both the new word and the existing one are members of major lexical categories. Blevins (2006) asserts that the morphological analysis of the patterns in a grammatical system can be approached either from the direction of 'morph-based' or 'word-based' which are referred in a morphotactic sense as constructive and abstractive respectively. The constructive method is strongly associated with post-Bloomfielian models, in which morphological analysis is essentially a process of segmentation and classification. The abstractive method which is our concern is characteristic of the pre-Bloomfieldian tradition represented by Paul (1880), Saussure (1916) and Kurylowicz (1964).

According to Haspelmath and Sims (2010) the word-based model represents a view of morphology consistent with the following definition: 'Morphology is the study of systematic covariation in the form and meaning of words'. In the word-based model, the fundamental significance of the word is emphasized and the relationship between complex words is captured not by splitting them up into parts and positing a rule of concatenation, but by formulating word-schemas that represent the features common to morphologically related words. For instance, the similarities among the English words *bags, keys, gods, ribs, bones, gems* (and of course many others) can be expressed in the word-schema.

A word-schema is like the lexical entries in the above in that it contains information on pronunciation, syntactic properties and meaning. But a word-schema may additionally contain variables such as N. In this way, it abstracts away from the differences between the related words and just expresses the common features. The schema in (1c) expresses the fact that all words in (1a,b) end in /z/, that they all denote a plurality of things and that they are all nouns (indicated by subscript N after the phonological representation). The phonological string preceding the /z/ is quite diverse and is thus replaced by the variable /X/. A word-schema stands for complete words, not for individual morphemes in the sense of the morpheme-based models. The word-schema in (1c) is a generalization based on the lexical entries in (1b), which are themselves word-forms, not morphemes. Blevins (2006) adds that realization-based models are described as 'word-based' because they associate properties with words. Yet models can also be classified morphotactically, in terms of the status that they assign to these units. From a morphotactic perspective, a model is 'word-based' if it treats surface word forms as the basic elements of a system, and regards roots, stems and exponents as abstractions over a set of full forms.

Research questions

The following research questions were set to guide the study:

1. What is the prevalence of word formation deficits in CWSLI in Hillcrest Junior Special School, Calabar?
2. What are the errors found in word formation by CWSLI in the study area?
3. What is the degree of the severity of errors in the formation of words in CWSLI?

Methodology

A survey research design was adopted for this study. 10 children between the ages of 5 and 17 years in Hillcrest Junior Special School, Calabar, Cross River State were studied. The children were diagnosed with F80.1 SLI and have not been subjected to speech therapy intervention. They were categorised into two groups. Group A consisted of boys while Group B consisted of girls. All of them within the age bracket of 5 to 17 years. The instruments used in the collection of data for this study were validated Word Structure (WS) assessment comprising 10 pictures and 10 sentences completionas well as the reliability test retest of Mean Length of Utterance in morphemes (MLU) as examined by experts to be r = 94, indicating a high level of internal consistency.

The Word Structure (WS), according to Kornilov et al (2012) is an individually ministered assessment for children aimed at assessing expressive morphological skills using pictures and sentence completion task. Thus, a participant is presented with the pair of pictures, followed by the incomplete sentences emphasizing on the pluralization morphemes and incomplete sentences emphasizing on the regular past inflectional morphemes for the child to complete.

The Mean Length of Utterance (MLU) is a measure of linguistic productivity in children. MLU according to Bigelow (2012) can be used in language sample analysis to help identify language impairment in population where standardized testing is difficult. A passage containing 100 utterances – phrases and sentences with indications of regular past inflections and plural morphemes are presented to the participants to read. A tape recorder and head set were used to record their utterances and responses in order to pick out errors in the targeted morphemes for a quantitative analysis using SALT software.

Data analysis and discussion

The data analysis was done descriptively using the Systematic Analysis of Language Transcript (SALT). The detailed analysis of the degree of severity of the disorder is shown below:

Table 1

Group A: Word and Morpheme summary

	Subj1	Subj 2	Subj 3	Subj 4	Subj 5
Age	8;1	10;0	12;4	9;6	15;0
gender	M	M	M	M	M
MLUw	4.15	4.11	4.15	4.24	4.10
MLUm	4.15	4.11	4.15	4.24	4.10
Number of bound morphemes omitted	70	67	70	63	65

Table 1 shows the mean length of utterance (MLU) in words and morphemes of the subjects in group A in the study area. The MLU values of the subjects in this group are computed in terms of words as well as morphemes. It shows that the MLU value is below 5.0 which typically indicates a high level of word formation deficits and the number of omitted bound morphemes in all the subjects is above average which signals serious morphological disorders.

Table 2

Group A Bound morpheme table

	Subj 1	Subj 2	Subj 3	Subj 4	Subj 5
Age	16;1	6;0	12;4	9;6	11;0
Gender	M	M	M	M	M
	Number of times omitted				
/'s	2	2		1	-
/ED	36	39	34	38	37
/ES	4	3	4	4	4
/IED	2	3	7	2	3

/IES	2	2	3	2	3
/S	15	18	11	10	13
Total percentage of errors	66%	67%	68%	72%	70%

Table 2 indicates the degree of severity in the omission of inflectional morphemes in the utterances of the subjects. From the analysis, it shows that the subjects in the study area which is group A have a high deficit in simple past tense morphemes and plural morphemes as well as other bound morphemes as shown in the analysis table. The table also shows the percentage of errors by the subjects.

Table 3

Group B Word and morpheme summary

	Subj 6	Subj 7	Subj 8	Subj 9	Subj 10
Age	9;3	7;9	8;10	14;11	13;8
Gender	F	F	F	F	F
MLUw	4.15	4.25	4.17	4.18	4.18
MLUm	4.16	4.27	4.17	4.18	4.18
Number of bound morphemes omitted	63	63	63	64	62

Table 3 indicates that the MLU values in all the subjects in group B is below 5.0 which says that their morphological development is weak. The number of omitted morphemes is above average which signals a high level of morphological disorder in all the subjects.

Table 4

Group B Bound Morpheme Table

	Subj 6	Subj 7	Subj 8	Subj 9	Subj 10
Age	10;3	16;11	7;10	16;12	15;9
Gender	F	F	F	F	F

	Number of times omitted				
/'S	-	1	1	1	1
/ED	34	36	38	40	38
/ES	4	5	4	5	4
/IED	1	4	3	-	3
/IES	1	2	2	2	2
/S	8	14	15	16	14
Total percentage of errors	65%	70%	64%	65%	65%

Table 4 shows that the degree of severity of the disorder in inflectional morphemes – simple past and plural morphemes are high. Deficits in the production of other bound morphemes are equally present. The table also shows the percentage of errors by the subjects. From our study, it was revealed that there is incidence of word formation deficits in children with SLI in the study area. The study also confirmed that there is a problem of simple past inflection and pluralization morpheme issues present in the children with SLI under investigation.

Presentation of result

The analysis of the performance report of each subject using language sample analysis with SALT Software presented the elicitation task of a narrative, sentence completion and picture naming task. The transcript length for all the subjects in the 2 groups was 100 utterances with a total of words between 415 – 421. The utterances consisted of 10 statements, 3 exclamations and 10 questions. The mean length of utterance in words and morphemes was below 5.0. This confirms Paul (2007)'s assertion that speakers with MLUm between 3.75 and 4.5 typically conjoin clauses with conjunctions and utterances and this may include simple infinitives, prepositional, and wh- clauses. Later, developing morphemes such as regular past tense and third person singular may be acquired. They omitted regular past tense, third person singular verbs, and plural morphemes. From the result of the analysis, the utterances of the subjects under investigation contained the following percentage errors: 65%, 65%, 68%, 70%, 65%, 65%, 70%, 64%, 65%, 65%. This indicates that incidence of word formation deficits in children with SLI in the study area records a percentage above 50%.

Summary and Conclusion

The study investigated the prevalence, types and the degree of severity of the word formation deficits in children with SLI in Hillcrest Junior Special School, Calabar. The study made use of word structure assessment comprising picture naming and sentence completion task as well as mean length of utterance measurement of a passage containing 100 utterances by the subjects. The study concluded by confirming that children with SLI in the study area exhibit significant deficit in the process of word formation. The study also revealed that the children with SLI in the study area displayed serious deficit in English regular past inflections and pluralization morphemes.

Tables 1 and 3 show the mean length of utterance in words and morphemes for all the subjects in Group A and B as well as the severity of the omission of bound morphemes which are all above average. Tables 2 and 4 show the number of omissions of regular past inflections, pluralisation and other bound morphemes. In Table 2 and 4, Group A and B, the regular past morpheme /ED and plural morpheme /S recorded a high degree of omissions in the children's utterances. The study confirms the works of several scholars such as (Cleave and Rice, 1997; Hadley and Rice, 1996; Bishop and Leonard, 2014, etc.) which contended that grammatical morphology is a weak area in children with SLI. From the foregoing, it is evident to note that the selected children with SLI in the study area exhibit a severe word formation deficits that requires immediate attention and remediation.

Recommendations

The following recommendations were made after our study:

1. More studies on morphological disorders should be carried out in other towns in Cross River State as well as other States of the federation in order to get the statistics and develop effective therapy for early remediation.
2. Parents, caregivers and teachers should be informed to pay attention to the language development of their wards so as to observe when there is deviation for immediate intervention.

References

1. Bigelow, K.M. (2012). Reliability of the mean length of utterance measure in samples of children's language.*All theses and Dissertations,* 3274.
2. Bishop, D.V.M., & Leonard, L.B. (2014). *Speech and language impairment in children*. New York: Psychology Press.
3. Bishop, D.V.M; North, T., & Donlan, C. (1995). Genetic basis of specific language impairment: Evidence from a twin study. *Development medicine and child neurology, 37, 56-71*
4. Cleave, P., & Rice, M. (1997). An examination of the morpheme in children with specific language impairment: The role of contractibility and grammatical form class. *Journal of Speech, Language and Hearing Research, 40, 480-492.*
5. Fenson, L., Dale, P.S., Reznick, J.S., Bates, E., Thal D.J., Pethick, S.J. (1994). Variability in early communicative development. Mongr.Soc. Res. *Child Dev*. 59, 1-185

6. Fisher, S.E. (2006). Tangled webs: Tracing the connections between genes and cognition. *Cognition, 101, 270-297*
7. Hadley, P., & Rice, M. (1996). Emergent uses of DO and BE: Evidence from children with specific language impairment. *Language Acquisition, 5, 209-243.*
8. Hannus, S., Kauppila, T & Launonen, K. (2016). Type and duration of home activities of children with specific language impairment: case control study Based on parents' Reports. *Child Development Research.*
9. Heather, K.J., Lely, V.d., & Christian, V. (2000). Lexical word formation in children with grammatical SLI: a grammar- specific versus an input – processing deficit. *Cognition*. 33 - 63
10. Hsu, H.J., & Bishop, D.V.M. (2010). Grammatical difficulties in children withspecific language impairment: Is learning deficient? *Human development*. 53: 264-277.
11. Ingram, T.T.S. (1959). Specific developmental disorders of speech in childhood. *Brain, 82, 450-454.*
12. Kornilov, S. A.Rakhlin, N.V., & Grigorenko, E.L. (2012).*Morphology and developmental language disorders: New tools for Russian*. Moscow: Russia.
13. Leonard, L.B. (2014). Children with specific language impairment across languages. *Child Development Perspectives,* 8, 1-5
14. Leonard, L.B (2014). Children with specific language impairment and their contribution to the study of language development. *Journal of Child Language*, 41 suppl. 41 (0 1) 38-47
15. Leonard, L.B. (2000). Specific language impairment across languages. D.V.M. Bishop & L.B. Leonard.(Eds.*). Speech and language impairments in children (pp 63-82)*. New York: Psychology Press Ltd.
16. Leonard, L. (1998). Is specific language impairment a useful construct? In S.Rosenberg (Ed.), *Advances in applied psycholinguistics; vol 2. Reading, writing and language learning, (pp.1-39).*
17. L. B., McGregor, K., & Allen, G. (1992). Grammatical morphology and speech perception in children with specific language impairment. *Journal of speech and Hearing Research,* 35, 1076 – 1085.
18. Lewis, B. A., & Thompson, L.A. (1992). A study of developmental speech and language disorders in twins. *Journal of Speech and Hearing Research, 35, 1086-1094.*
19. Loeb, D., & Leonard, L. (1991). Subject case marking and verb morphology in normally developing and specifically language impaired children. *Journal of Speech and Hearing Research, 34, 340-346.*
20. Marchman, V.Wulfeck, B., & Ellis Weismer, S. (1999). Morphological productivity in children with normal language and SLI: A study of the English Past tense. *Journal of Speech, Language and Hearing Research, 42, 206-219.*
21. Marshalli (2013). Word production errors in children with developmental language impairments. Philosophical transaction of the Royal society of Lond. *Series B. Biology Sciences* 369(1634)
22. Menyuk, P. (1964). Comparison of grammar of children with functionality deviant and normal speech. *Journal of speech and Hearing Research*, 7, 109 – 121.
23. Nicolielo, A.P., and Rocha, S. (2014*). Phonological processing in subjects with specific language impairment* in*R*evista CEFAC online version. 16/6.
24. Oetting, J., & Horohov, J. (1997). Past tense marking by children with and without specific language impairment. *Journal of Speech and Hearing Research, 40, 62-74.*
25. Paul, R.(2007). *Language disorders from infancy through adolescence: Assessment &*

intervention (3rd ed). Elsevier Health Science, Amsterdam.

26. Radford,A.Atkinson, Britain, Clahsen and Spencer (2009).*Linguistics: An introduction*. New York: Cambridge University Press.
27. Ramus, F., Marshall, C.R., Rosen, S., Van der Lely, H. K. J. (2013). Phonological deficits in specific language impairment and developmental dyslexia*:* Towards a multidimensional mode. 136/2 in *Brain: A journal of Neurology*.
28. Rice, M.L. (2000). Grammatical symptoms of specific langu*age* impairment. Bishop, D.V.M., &Leonard, L.B. (Ed). *Speech and language impairments in children*, 100-113 New York: Psychology Press Ltd.
29. Spinath, F. M., Price, T.S., Dale, P.S., & Plomin, R. (2004). The genetic and environmental origins of language disability and ability. *Child Development, 75,445-454*.
30. Tomblin, J. B. (2009). Children with specific language impairment. Bavin, E.L (Eds), *Handbook of child language (pp 419-431)*. New York: Cambridge University Press.
31. Tomblin, J.B., & Buckwalter, P. (1998). The heritability of poor language achievement among twins. *Journal of Speech and Hearing Research, 41, 188-199*.
32. Van de Lely, H.K.J., & Ulman (1996). The computational and representation of past – tense morphology in normally developing and specially language impaired children. *Proceeding of the 20th Annual Boston University conference on language Development*. Pp 816 – 827. Somerville. M.A: Cascadilla press