COMPUTERIZED LINGUISTIC PROTOCOL FOR SCREENING (CLiPS)

ANITHA.R
(Register No. 02SH0002)

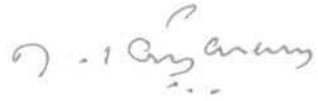
A Dissertation submitted in part fulfillment of the final year Masters' degree (Speech and Hearing), University of Mysore, Mysore

ALL INDIA INSTITUTE OF SPEECH AND HEARING
NAIMISHAM CAMPUS, MANASAGANGOTHRI,
MYSORE - 570006

May 2004

CERTIFICATE

This is to certify that this Dissertation entitled ***"Computerized Linguistic Protocol for screening (CLiPS)*** "is the bonafide work done in part fulfillment of the degree of Master of Science (Speech and Hearing) of the student (Register No. 02SH0002).



Prof. M. Jayaram
Director
All India Institute of Speech & Hearing
Mysore-570006.

Mysore
May 2004

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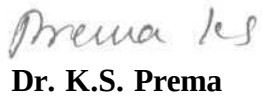
This is to certify that the Dissertation entitled ***"Computerized Linguistic Protocol for screening (CLIPS)"*** has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in any other University for the award of Diploma or Degree.



Dr. K.S. Prema
Guide
Lecturer in Language Pathology
Department of Speech and Language Sciences
All India Institute of Speech & Hearing
Mysore - 570006.

Mysore

May 2004

DECLARATION

I hereby declare that this Dissertation entitled ***"Computerized Linguistic Protocol for screening (CLiPS)"*** **is** the result of my own study **under the guidance of Dr. K.S. Prema,** Lecturer in Language Pathology, Department of Speech -Language Sciences, All Institute of Speech and Hearing, Mysore and has not been submitted earlier in any other University for the award of Diploma or Degree.

Mysore

May 2004 **Register No. 02SH0002**

Dedicated to

The LORD Almighty

&

My Beloved Family

Acknowledgement

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INTRODUCTION

"Language is unique since it is worth a thousand pounds of words"

All living creatures communicate; only humans exchange information using a code that we call language. Language is the knowledge of a code for representing ideas about the world through a conventional system of arbitrary signals for communication. Language is a complex combination of several component rule system and it can be divided into three major components: Form, Content and Use (Bloom & Lahey, 1978). 'Form' includes syntax, morphology and phonology-those components that connect sounds or symbols with meaning, content encompasses meaning or semantics and the 'use' comprises 'pragmatics' (Bloom & Lahey, 1978).

Owens (1996) defined language as a socially shared code or a conventional system for representation of concepts through the use of arbitrary symbols and rule-governed combination of these symbols. This language ability can be affected in a child that leads to language disorder.

Language disorder is a term that represents a heterogeneous group of either developmental or acquired disabilities principally characterized by deficits in comprehension, production and/or use of language. Language disorders are chronic and may persist across lifetime of an individual. The symptoms, manifestations, effects and severity of the problems change over time. The changes occur as a consequence of context, content and learning tasks (Bashir, 1989).

The disorders of language are labeled in many ways; they are language impairment, language disability, language disorder, language delay, language deviance and childhood or congenital aphasia or dysphasia.

Approximately 5 to 10% of children have some type of speech and/or language impairment (Rossetti, 1990). Based on the 10% rate (American Speech-Language-Hearing Association, 1991) about 6.5% have language disorders including those who are deaf or have emotional disturbances. National Sample Survey Organisation (NSSO) (1991) has indicated that 1.9 % of population has physical or sensoiy disabilities and that 3% of the children between 0-14 years have developmental delays. Prevalence of physical disability in urban population is 16.75 /1000 as compared to 19.75/1000 in rural areas. 3.242 million are hearing impaired and 1.966 have speech disability and 4.482 million have both hearing and speech disability. For speech disability, nearly 26 % are in 5-14 age group. Nearly 50% are in age group of 15-59 years.

It is known that language disorders frequently occur along with other conditions. Nelson (1993) provided a short list of categorical conditions often associated with language disorders, which she divided into central, peripheral, environmental and emotional factors:

I. Central factors
    a. Specific Language impairment
    b. Mental Retardation
    c. Autism
    d. Attention Deficit Hyperactive Disorder (ADHD)
    e. Acquired Brain Inquiry
    f. Others

II. Peripheral Factors
    a. Hearing Impairment
    b. Visual impairment
    c. Deaf-blindness
    d. Physical impairment

III. Environmental and Emotional Factors
    a. Neglect and abuse
    b. Behavioral and emotional development problem

IV. Mixed factors.

Identification of language disorders becomes important for intervention purposes. Identification of language disorders is generally done by employing screening tests.

I. Screening

Screening is typically used when more elaborate methods become impractical from the perspective of both time and money. Every child with a risk of language disorder should be screened. Screening measures are typically short tests that sample a variety of language skills. Their purpose is to identify children who may have problems that warrant further testing

Screening is important for the early intervention, which reduces further complications of the child. Screening can be formal or informal and that formal screening either can be norm-referenced or criterion-referenced. Norm-reference screening compares the child's performance to that of a normative group of the same age or grade. Criterion-reference measure uses a criteria for normal performance to which the clinician compares a given child's performance. A screening test should

also provide description of development of the test, content, administration, scoring, reliability and validity of the test.

Tests for assessment of language acquisition in children constitutes an essential part of the tools available for professionals interested in the remediation of childhood language disorders. A clinician needs to make an appropriate choice of test, considering several factors, few of which include age of the child, nature of the problem, the approach within which the test is based, ease of administration and economy it provides in terms of time in addition to standardization, reliability and validity of the test.

To summarize, choice of a screening test is made by an examiner on the following considerations:

a) Extent of coverage of language abilities
b) Appropriateness of test(s).
c) How accurately does the test protocol identify those with and without problem?
d) Administration time
e) Scoring time
f) Cost and
g) Reporting mechanism.

Bloom and Lahey (1978) stated that it is dangerous to make assumptions about expression on the basis of comprehension or vice versa. Since comprehension and production capacities function somewhat independently in development, each of these modalities needs to be assessed as a distinct entity. Also in evaluating the results of screening, the issue of cultural or linguistic background of the child should be considered.

A variety of tests and scales developed in the West are generally available for screening purposes. These Western tests cannot be used in the Indian context because of

a. The cultural and the linguistic variability,
b. Absence of norms on Indian population,
c. Some of the test items may not be suitable for the Indian context since Indian children may not be exposed to them. E.g. Ham Burger- Most of the Indian children may not be exposed to it.

To overcome these lacunae, there are few tests developed in India. They are:

a. A Screening Picture Vocabulary Test in Kannada (KPVT) - Sreedevi (1988)
b. Screening Test for the Acquisition of Syntax in Kannada (STASK) - Vijayalakshmi(1986)
c. A Syntax Screening Test in Tamil (SST) - Sudha (1981)

But these screening tests have certain disadvantages:

a. These tests do not assess the wide aspects of language. Most of them assess either the vocabulary or syntactic ability of children.
b. These tests check either the receptive or expressive ability but not the both.
c. Tests are time consuming.
d. These tests are for limited age range of children.
e. All these tests are technical in nature and hence only the professional need to administer the test.

II. Need for the study

The available language tests in India are mostly for diagnostic or assessment purposes. Owing to the paucity of the screening tests or measures, we have a great setback in our screening or identification of children with language delay/ disorder. In our country, there is high mismatch between clients and number of professionals, and hence it becomes highly impractical to test the large percentage of children with developmental language disorder. There is need for a screening protocol, which is user-friendly, easily accessible by examiners and the screening procedure that is de-professionalised.

III. Objectives of the study

a. To develop the Computerized Linguistic Protocol for Screening children (in Kannada)[CLiPS].
b. To check for the developmental trend if any on various linguistic aspects.
c. To find out the gender difference if any in language acquisition.

REVIEW OF LITERATURE

Only the human species has devised an elaborate system of shared symbols and procedures for combining them into meaningful units called language. Language involves the interaction of many skills that combine for effective communication.

Language is a social tool, defined as a serially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combination of those symbols. Each language has its own symbols and rules for symbol combinations. Dialects are sub-categories of this parent language that use similar but not identical rules. Language exists because language users have agreed on the symbols and the rules to be used. This agreement is demonstrated through language usage. Since users can agree to follow the rules of language, they can also agree to change the rules.

Chomskyan model and the behavioral model explain language development in children traditionally. The model proposed by Chomsky and others is that the child is born with an innate capacity for language acquisition; that the human being is pre structured towards the acquisition of language, so that when child is exposed to language, certain language structuring principles automatically begin to operate.

The behaviorist model explains language learning as essentially a process of imitation and reinforcement. The child learns to speak by copying the voice patterns heard around him, and through stimulus and response, trial and error, reinforcement

and reward, he would refine his own production until it matches the language of his adult models.

Most of the work on children's language acquisition has been focused on preschool development. The relative speed and efficiency of language learning has been taken as a main justification for a large innate component in language development. It is often argued that children's language acquisition is virtually completed by the time they go to school. It has become increasingly clear, however, that a great deal of acquisition takes place after five years, particularly in the context of formal schooling. A review of literature on language acquisition reveals that language is an ongoing process, which is active during the school years also. A number of studies in a variety of disciplines are reported in the area of language acquisition. Psychologists, linguists, educators, parents, neurologists and speech language pathologists have contributed to the knowledge of language acquisition in children.

I. Prevalence of language disorders

An estimate of the prevalence of language disorders in children and adults is a difficult process. Studies indicate that the prevalence rates range from as low as 2.95% to 38.5%.

Stewart (1986) studied incidence and prevalence of communicative disorders in a mid southern public school system in USA in kindergarten through 12^{th} grade. Results indicate an average prevalence of 2.95% for primary communicative disorders in school population. In another study he determined number and prevalence of communicative disorders in majority of preschool and school age children in USA

Results indicate, out of 3827 children seen from 1973 to 1977, 38.5% were diagnosed as having communicative disorders. Distribution of population for hearing, speech, language and learning disabilities was 4.88%, 1.63%, 0.84% and 0.33% respectively. Distribution for preschool, elementary, junior high school was 39.2%, 38.9% and 21.9% respectively. Hill and Haynes (1992) compared the language performance of low-achieving (LA) elementary school students and normal achieving students. Results show that over half of LA group scored low on language measures.

II.Language development in children

Language development in children is a complex phenomenon. Since language incorporates phonological, lexical, semantic, syntactic and pragmatic aspects, development of skills in each of the above is crucial. An understanding of language development in normal children is necessary for identification of children with a delay or deviance, which can be done through screening procedure.

i. Lexical development

Nelson (1973) studied the first 50 words acquired by 18 children and noted that nominal and action words were numerous than words from other categories. A further analysis led to an interesting conclusion that children learn easily the names of the things that they can act on or they act themselves. For e.g. keys, shoes, etc.

Leonard, Schwartz and Folger (1974) attempted to determine whether imitated words were acquired more readily in production than words that were not imitated. They observed that first spontaneous use of non-imitated words required no more stimulus exposures than the first spontaneous use of previously imitated words.

However in their follow-up study Leonard, Steckol and Panther (1983) observed that spontaneous use was more frequent for words that had been both imitated and used spontaneously than for words that had been used spontaneously without being imitated. This shows that imitation plays an important role in lexicon acquisition. These findings suggest that imitation could serve as a vehicle through which words might be introduced more readily into the lexicon.

It is generally observed that children acquire nouns first; verbs second and only the children with the advanced language ability use adjectives, and relational words are acquired still later and pronouns by the end of second year (Beckwith and Thompson, 1976). Studies related to lexicon development suggested that children's early words take a variety of forms.

Attempts have been made to analyze as to why and how a child acquires the words. It is found that when children name objects in the environment, their intention is not to inform the listener the object's name (Neinio and Bruner, 1978) but rather to gain or direct the attention of the listener (Halliday, 1975). According to Leonard and Fey (1979) young children tend to avoid using certain adult form of words. The child selects those items, which belong to or rather fit into his production system, and reflects the complex word structure. As he grows up he gradually tries to fit in these words to his vocabulary system.

Mc Shane (1980) attempted to study the communicative functions served by children's early words usage. Mc Shane suggested that young children used relatively limited lexicons to convey a variety of communicative intentions. Among these studies on word production, much of the work was devoted to find the factors that

influence a young child's tendency to use a particular word. One such factor is unsolicited imitation. The other factor that influences the young child's tendency to use new word is the phonological composition of a word. Children's selection and avoidance of words depends upon the initial consonant of the words and the interaction between initial consonant and syllable shape of the words (Shibamoto and Olmsted, 1978).

Schwartz and Leonard (1982) found that expressive lexicons of appropriately five words were more likely to use new words than words containing consonants they had shown prior evidence of attempting.

These findings on early word production and the factors influencing the production and the communicative function served by these words seem to offer new dimensions for clinical management. It specifically suggests a modification in lexical training procedures.

ii. Syntactic development

Many researchers have described syntactic development in stages. The best known of these is that of Brown (1973). Brown found that chronological age is not a good predictor of language development and found that the average length of children's utterance when measured in morphemes provided a satisfactory index for comparison between children and also a sensitive measure of a child's language development over-time. Crystal, Fletcher and Garman (1976) use chronological age to identify seven stages of syntactic development.

Stage-I is the period from around 9-18 months where the majority of the sentences are single element, e.g. "dada, there, no, gone, more". The semantic or sociolinguistic function can be classified but not their grammar.

Stage-II is from around 18 months until around two years, and contains the development of sentences that are two elements in length. There is, to begin with, a transitional stage, sequences of single-element sentences come together, but lacking the prosodic coherence of a sentence where both elements are within the same intonational frame, e.g. /dada/gone/ becomes /dada gone/. After a while, certain patterns will become more predictable than others (e.g. agent before action in English), but until this happens, it is not possible to be sure whether terms like subject, verb, object are appropriate. By the end of the stage-II it becomes possible to see clear contextual or formal clues as to the sentence meaning which would permit confident grammatical analysis, some inflections that begin to emerge (e.g. -ing, -s, -ed) and word-order contrast, which is more stable.

Stage-Ill runs from around two to around 2.6 years and show the development of sentences containing three main elements, e.g. "daddy kick ball"," that big bag", "where man gone". Some children will begin to fill out some of these elements of sentence structure by attaching particals to the main words e.g. "daddy kick a ball", "daddy kicking ball", but apart from noting that this process is a very gradual one, emerging in object position before subject position, there are few details available. Further inflectional endings emerge throughout this period, e.g. forms of the verb and noun and the first uses of auxiliary verbs and pronouns appear. Utterances will contain the "main" words of a sentence but lack the little grammatical words and endings are

sometimes called telegraphic but it should be clear from the above remarks that this could be a misleading label, if it is taken to mean that the child is "leaving out" items he could have put in.

Stage-IV continues the process begun in stage-III increasing sentence structure so that it contains four or more main elements, e.g. "Susie going to town today", "where my mummy's had gone", "Steven give that to Lucy". Parts of each element may not be fully developed (as in examples just given) and children will be heard using grammatical words and endings with varying degrees of consistency, e.g. the /'s/ sometimes being present, sometimes not. Noun phrases become more complex (e.g. man with a hat on) and this is particularly noticeable in post-verb positions which makes the bulk of the length of a sentence in English appear after the verb rather than before. Another important development is the emergence of co-ordination within phrases (e.g. boys and girls). By the end of this stage, in short, the vast majority of the types of simple sentence (i.e. sentences containing only one clause) have come to be used, viz., statements, questions, commands, transitive and intransitives clauses, etc. This presumably accounts for the widely voiced feeling that by three years, the child has learned the 'basic' grammar of his language.

Stage-V is from around 3-3.6 years, focuses on the learning of complex sentence structure (i.e. sentence containing more than one clause) and basic patterns of sentence sequence. The use of 'and' to join clauses is particularly noticeable, (Daddy gone in the garden and-he felled over-and-and he hurt his knee) along with some other conjunctions, both co-ordinating and subordinating (e.g. I said he did it), and comparatives structures (e.g. Its bigger than that) develop, along with the associated

inflections. Phrases also get more complex, with the emergence of relative clauses, etc., (e.g. this is the house I built yesterday).

By 3.6 years, then, it can be said with some conviction that a child has learned the essential creativity of language; he can produce sentences that are indefinitely long, for once he has learned that a sentence can be made bigger by adding a clause on with and, he comes to repent the process, often and infinitum. He also has a wide range of sentence types. 3.6years old spontaneous speech is, therefore rarely unintelligible. Yet it is different from adult speech, in two main respects. It contains a number of errors and a number of structures yet to be learned. At this stage the child is learning the regularities and irregularities of language. At 3.6 years, at any rate, errors are common, though they rarely impede intelligibility, e.g: "him going now'" "what you be doing?" "You better not do that", "nobody don't likes me".

Stage-VI is from 3.6-4.6 years. In this stage, the various grammatical systems which are evidently still being developed come to be thoroughly acquired, e.g. the pronoun systems, the auxiliary verb system. Most irregular verbs and nouns also come to be learned as such. In addition to this process of progressively eliminating syntactic or morphological error between 3.6-4.6 years, certain new grammatical features begin to develop. Passive structures emerge, as do more complex ways of introduction noun phrases, e.g. all/both/much/many. It takes a long time before such structures come to be fully established, but their presence comes to be felt quite markedly at this stage.

Stage-VII deals with the acquisition of grammatical structures after age 4.6 years. What the child has to learn after age 5 is that there are layers in the interpretation of a sentence that are not immediately apparent from perceiving the

form of the sentence. Sentences do not always mean what they seem to mean. And it is worth noting that it is only when this process starts that children begin to appreciate the various effects it is possible to introduce into language using it- for example: jokes, riddles, puns, and the like, which relay for their effect on the detection of ambiguity.

a. Conjunctions

Hood and Bloom (1979) found that in spontaneous production children produce 'because' and 'so' in the age range of 3:6 to 9:6 years.

Wing and Scholnik, (1981); Scholnik and Wing, (1982) have found almost errorless comprehension by 1st graders of sentences using 'because'. These authors argue that children find 'because' easy relative to other conjunctions, such as 'unless', because the former expresses a positive entailment relation and a speaker's positive belief in both clauses connected, whereas the latter does not involve positive concepts.

b. Comparatives

Layton and Stick (1971) found that children of three to four years of age understand comparative markers and superlative markers.

Clark and Eve (1974) say that child begins to speak by learning meanings of words. An important aspect of giving the child a conceptual basis is the use of strategies in interpreting perceptions. Words like "dog" are related to objects whereas words such as "big" and "wide" are related to concepts. The ability of children to distinguish both objects and concepts is clearly illustrated. Children use perceptual information such as shape, movement, size, smell and texture to assign meanings to

words. There are overextensions, and the child uses them to help hypothesize the meaning of a 'new' word. As children grow older, they acquire semantic knowledge.

David (1974) studied children 3-4 years of age. In which he asked the children to indicate "which one has less" in four different contexts. He found that performance was the same in all contexts indicating that 'more' is acquired before 'less' and that those children who do not know 'less' treat it as a synonym of 'more'. Differing results of previous studies cannot be attributed to the type of materials to which the comparative judgments were applied.

c. Negatives

Bloom (1970) found that children at the one- and two- word utterance stage expresses three types of negation: (1) non-existence (alone juice- when there is no more juice in the cup), (2) rejection (no milk- as the child rejects the offer of milk), and denial (not a book- as mother points to a truck and says, "this is a book").

Drozd (1995) describes the use of pre-sentence 'no' as a metalinguistic exclamatory negation. In this case, the child is responding to an adult utterance ("Do you want to go to bed?"), and repeating most of this adult utterance (No bed). O'Grady (1997) proposes a trigger for the child's utterance. When adults frequently say, "No, don't touch that," the position of the negative (no) cues the child to produce this negative element in sentence-initial position (no touch).

Indefinite negative words such as nobody, no one, and nothing present the young language learner with difficulty. Young children often say, "I want anything," when they mean, "I want nothing" (Seymour & Roeper, 1999). Older, school-aged

children might say, "I don't got no books," and even adults might say, "I don't see nobody." Although these sentences may be judged to be ungrammatical, double negatives are considered grammatical in many other languages and dialects (Peccei, 1999).

d. Interrogatives

Inten'ogatives are Wh-questions, these are the questions which begin with who, what, when, where, why, or how. These questions require that the listener provide additional information. To form correct wh- questions, they must learn to (1) transpose the subject and the auxiliary verb and (2) add the wh- form at the beginning of the sentence ("what is the boy eating"). Children go through four phases as they develop the ability to formulate questions (Klima & Bellugi, 1966).

Phase 1: children use raising intonation and wh- forms.

Phase 2: children use greater variety of wh- questions

Phase 3: limited use of inversion was observed.

Phase 4: use of inversion in positive wh- questions.

Ervin-Tripp (1970) found the order of acquisition of wh- questions:

1. The wh- pronominals-what, where and who.
2. The wh- sequentials- when, why and How.
3. The wh- adjectives- which and whose.

e. ***Yes-No questions***

Evin-Tripp (1970) studied the comprehension aspect of yes-no questions and found that children by two to five years of age understand yes-no questions. Bloom (1970) observed infrequent use of yes-no questions at the age of 25 months. Bellugi (1971) found that children of two year old could use yes-no without any intonation

pattern and three year old could use yes-no with an intonation pattern. Menyuk (1977) studied the expression task of yes-no questions he found that the children by two-three years use yes-no questions of many kinds.

Quigley, Wilber and Montanelli (1974) observed that by 10 years of age children produced yes-no questions 100% correctly. Vijayalakshmi (1981) also studied the comprehension aspect of yes-no questions and found that children by two to two-and-a-half years understand few action or object question type of yes-no questions and children by four to four-and-a-half years understand few subject question type of yes-no questions.

Lund and Duchan (1983) reported that yes-no questions can be asked in four ways, as follows:

1. Intonation: Rising intonation on the end of the word, phrase, or sentence conveys a questioning attitude. E.g: That's your dog?
2. Inversion: Beginning a sentence with an auxiliary verb or copula verb instead of the subject produces yes-no questions. This is referred to as inversion because the presumed underlying structure is a subject-verb-object statement that is transformed into a question by inverting the subject and verb. Notice that only the first auxiliary verb precedes the subject. E.g: can I do it?
3. "Do" insertion: the "do" acts as an auxiliary but adds no meaning to the verb. It is used before the subject to ask yes-no questions where no other auxiliary verb is used. The "do" form used reflects the tense of the sentence. E.g: Do you want to go?.

Sreedevi (1988) reported at four years of age, children use yes-no questions correctly. Prema (1979) reported that children at five to six years of age uses interrogative markers of yes-no questions.

f. Tenses

Berko (1958) found that children by 5.6 years of age use the present tense 97% of the time correctly and uses the past tense 25-85% of time correctly four to five years of age uses the present progressive tense 72% of the time correctly and uses past tense 73% of the time correctly.

Vijayalakshmi (1981) reported that children by three to four years understand simple present and future tenses and uses simple future and present tenses. Children by four years to four-and-a- half years understand and use simple past and past continuous tenses. Sreedevi (1988) reported that children by two years and above use present and past forms. These are acquired earlier than the future tense forms.

iii. Semantic Development

Semantic development in children has received far less attention than either grammar or phonology. But there are certain difficulties inherent in making any study of meaning at all. While studying meaning there are no tangible features of language form to look out for. Meaning arises from the way in which forms are used in relation to the extra linguistic world of objects, ideas and experiences. The commonest traditional measure of semantic development is vocabulary growth. The range varies from 2,000 - 10,000 for a five year old. Another difficulty comes in when we consider

whether we are counting the number of words or the number of senses in which the word is used.

a. *Color*

Braisby and Dockrell (1999) studied the difficulty of color naming in children. The meanings of natural kind terms are acquired before the meanings of color terms. Explanations have typically claimed that object terms are more salient than property terms.

Such explanation however, tend to ignore the fact that natural kind terms refer to categories with sharp, clear boundaries while color terms refer to categories with unclear or variable boundaries.

Important factors account for children's color naming:

1. An explanation is required of the fact that low frequency color terms tend to elicit much poorer naming than their natural kind counter parts.
2. An explanation is required of the fact different patterns of responding for natural kind and color terms (natural kinds tend to elicit more responses of "don't know", while color terms tend to elicit more production of incorrect color names.

III. Comprehension versus production

Comprehension of specific linguistic unit precedes the ability to produce the same unit (Mc Neill, 1966 a; Menyuk, 1977, Shipley, Smith and Gleitman, 1978; Bloom, Miller and Hood, 1978; de Villers and de Villers, 1978; Vijayalakshmi, 1981). Comprehension is the knowledge or understanding of an object, situation, event or

verbal statement. Production is the physical execution of the phonological and graphological rules for actual surface structures. Production is also primarily dependent upon an intact physiological mechanism.

The comprehension is thought to remain superior to production throughout life. Fraser, Bellugi and Brown (1963) observed that imitation ability exceeds comprehension, which in turn exceeds production. Mc Neil (1966 a) argues that this phenomenon should be expected since passive control (comprehension) of a given linguistic unit has less obstructing and distorting factors separating it from competence than active control.

Chomsky (1969) has reported an experiment on late grammatical acquisition, which focused primarily on comprehension. Chomsky's data show that syntactic development continues until at least ninth year of life. Gaer (1969) has also studied comprehension in terms of modem grammatical theory. He reports that the children's relative abilities to comprehend certain transformations vary as a function of age. At age three, they seem to understand active, passive, question and negative trans formations more or less equally well, performing at about 58% accuracy. By age four, active sentences are better understood than passives and negatives. For five and six year old children actives, questions and passives show no difference; all being understood better than negatives. Adults tend to understand all these transformations at about 95% accuracy.

V. Gender and Language development

Girls are more advanced in language development than boys, the notion that is supported as well as contradicted by many studies.

Jespersen (1922) observes that 'little girls' on an average, learn to talk earlier and more quickly than boys and also exceeds them in talking correctly. Mc Carthy (1954) consistently found a faster development of language in girls than in boys. And girls performed better than boys in pronunciation, mean length of utterance, vocabulary comprehensibility of responses at an early age and verbosity. On the contrary, language disorders are reported to be more frequent in boys than girls.

Templin (1957) in a large-scale study found that girls tend to exceed performance in articulation of sounds at the older ages and the boys in the word knowledge, yet the differences between the genders are somewhat less pronounced than is frequently stated. In a study of kindergarten children by Winitz (1959) it was fond that girls were significantly superior to boys on three to twelve measures, but Winitz points out that these measures were not those generally regarded as of major importance. O' Donnell, Griffin and Norris (1967) found no significant difference in the performance of boys and girls in their study. Bliss, Allen and Wrasse (1977) in their study found males and females perform alike, holding age constant but the males require more prompting and structuring before they produce the correct response.

Mc Caulay (1978) in his article "The myth of female superiority in language" has reviewed most of the studies, which have considered sex as a variable in their study. He concludes that the females' superiority of language might be more of an

apparent nature than a real one. If any difference exists it is only of transient nature in language acquisition.

Vijayalakshmi (1981) found that females performed better than males only in one of the groups (3 to 3.6 years). Kathyayani (1984) in which she found that there is no clear distinction in the performance of girls and boys. Girls performed better than boys in certain age groups while the vice versa in certain other age groups. Sreedevi (1988) also found no clear distinction between the gender performances across various age groups.

However, it is not unusual for problems to be present or even to persist during early school years. Language problems may be accompanied by problems of social interaction, which can further impede progress at school. Thus in this, every child who is suspected of language disorder should be screened.

VI. Screening

The term "screening" is often applied to any kind of active case-finding process; but the concept actually refers to the use of simple tests or procedures to check persons who believe themselves to be healthy, in order to detect some abnormality or disease process which is not yet clinically obvious and whose prognosis improves by early treatment. Screening is typically used when the number of individuals under consideration makes the use of more elaborate methods impractical- usually from the perspectives of both time and money.

Children suspected of language disorder should be screened. Screening measures are typically short tests that sample a variety of language skills. Their

purpose is to identify children who may have problems that warrant further testing. In this case, the quickest method of answering the question is the best. It would not, for example, make sense to use a test that has a great number of subtests and items for screening measure if the same question could be answered as validly by a shorter instrument. On the other hand, a screening measure that assesses only a narrow range of language behaviors, should not be used.

a. Importance of screening

Screening is important for identification and planning further management purposes of the child who is screened.

a. Screening tests give a quick reference to a child's has problem that warrant further testing.
b. Screening and identification followed by intervention can take place as soon as possible, which helps in
    i. Prevention of later language and learning problems and behavioral/ emotional difficulties,
    ii. Prevention of secondary emotional disorder (Battin, 1981).
c. Essential for planning appropriate rehabilitation strategies.
d. Cost effective because the earlier treatment is begun the more rapidly it is concluded (Cooper, Moodley and Reynell, 1974; Cole and Wood, 1978).
e. Determination of the prevalence of such problems so that service delivery can be effectively planned.

A screening test should meet several needs for it to be effective:

a. It should be valid and reliable.

b. Screening test must demonstrate what it purports to test, in this case language behaviour.

c. A screening test should pass children with normal language development and fail those with disorders.

d. A screening instrument is not designed to diagnose or evaluate a disorder, but only to identify a child with one.

e. It needs to yield similar results with different examiners or over a given period of time.

f. Age level should be appropriate for early detection; the preschool age, generally considered to range from 2.5- 5 years, need to be targeted.

g. It needs to be appropriate to large segment of population.

h. It should be quick in its administration and scoring in order to obtain access to a large number of children in as little time as possible.

b. Types of screening

Screening tests are for:

1) Direct or indirect screening.
2) Formal or informal screening.
3) Norm-referenced or Criterion-referenced screening.

1. **Direct screening** involves screening aspects, which are directly related to the language, while **indirect screening** involves screening aspects, which are not directly related to the language.

2. **Formal screening** involves screening using formal/ standardized methods of screening tests, while **Informal screening** involves screening using informal/ non-standardized methods of screening tests.

3. **Norm-referenced Screening** compares a child's performance to that of a normative group of the same age or grade. Further testing is warranted when the child's performance on the screening test falls significantly below that of other children of the same age. It is usually used to document the language disorders. These tests offer a controlled opportunity to examine selected aspects of language. Alternatively, the **Criterion-referenced Screening** measure uses criteria for normal performance to which the clinician compares the child's performance. The criteria may be based on developmental sequences, standards for spoken English, or some other framework.

c. Western Studies

A variety of tests and scales in the West are commonly available for screening purposes. Most of these tests include other aspects along with the language evaluation. They assess the communication ability of the child among wide-range of the abilities. Table 1 gives the details of screening tests.

Table 1

List of Western tests for screening language

Sl. No	Test, Author and Publishing date	Age	Description
1.	Denver Developmental Screening Test (DDST): (Frankenburg, Dodds, & Fandal, 1969):	Birth to age 6 years	It is designed to screen children from the general population to identify children from in four areas: personal-social, fine motor, language, and gross motor who need further evaluation.
2.	Northwestern syntax screening test: (Lee, 1971):	3 - 8 years.	It uses a picture pointing task to measure receptive language and a delayed imitation task to measure expressive language for children.
3.	The Language Assessment, Remediation, and Screening Procedure (LARSP) (Crystal, Fletcher and Garman, 1976)	9 months to 4.6 years	It identifies seven stages of syntactic development corresponding to the chorological age (nine months to four years six months) and describes the syntactic characteristic of each stage. It contains 125 items organized into five sections.
4.	The Oral Language Sentence Imitation Screening Test (OLSIST)- (Zachman, Huisingh, Jorgensen and Barrett, 1977 a)	3-6 years	It is used for imitation for assessment of syntax. The goal is ascertain normalcy of function, it is not norm referenced.
5.	Fluharty Preschool Speech and Language Screening Test (Fluharty, 1978)	3-6 years.	Measures performance in articulation, receptive language, expressive language and composite language. Subtests are: articulation, repeating sentences, responding to directives and answering questions and describing actions and sequencing events.

6.	Test of early language development (TELD): (Hresko, Reid, & Hammill, 1981)	3 through 7.11 years	It measures spoken language abilities of children in the areas of semantic and syntax in about 15 minutes using 38 items. Yields standard scores, percentile ranks, and age-equivalent scores.
7.	Developmental indicators for assessment of learning-revised (DIALR): (Mardell and Goldenberg, 1983)	2-6 years	It is a screening tool, which is often used to screen larger numbers of children through the use of team of evaluators, each of whom elicits behaviours from an individual child within a given area.
8.	Joliet 3-Minute Speech and Language Screening Test:	2.5-4.5 years	Identifies children needing further testing in phonology, grammar, and semantics.
9.	Kindergarten Language Screening Test: (Gauthier and Madison,	3.6 - 6.11 years	Identifies children needing further language testing to determine deficits that might impede academic achievement.
10	Boehmtest of basic concepts- preschool version (Boehm-preschool): (Boehm, 1986)	3 - 5.11 years	Measures understanding of 26 basic relational concepts.
11	Boehm test of basic concepts -Revised (Boehm-R): (Boehm, 1986)	Kinder garten to 2nd grade	Measures child's mastery of 50 basic concepts.
12	-Utah Test of Language Development-3 (UTLD-3): (Mecham, 1989)	3 to 10.11 years.	It yields subtest standard scores in the areas of language comprehension and language expression. It also yields a language quotient score.

13	A screening tool for delayed language in toddlers (LDS): (Rescorla, 1989)	2-year-old children	The LDS is a screening instrument designed to be completed by a parent in a paediatric waiting room, in the home, or in a variety of other settings in 10 minutes. The LDS combines a vocabulary checklist with enquires about the child's production of word combinations.
14	Bankson Language Test: (Bankson, 1990)	3-7 years	It is organized into three general categories: semantic knowledge (body parts, nouns, verbs, functions, propositions, opposites); morphological/ syntactic rules (pronouns, verb tense, auxiliaries, modals, copulas, plurals, comparatives/superlatives, negation, questions); and pragmatics (ritualizing, informing, controlling, imagining). Standardized on 1200 children in 19 states.
15	Wiig criterion-Referenced inventory of language (Wiig-CR1L): (Wiig, 1990)	4 to 15 years	This criterion-referenced assessment used as follow-up to norm-referenced testing to obtain baseline information and plan intervention in the areas of semantics, morphology, syntax, and pragmatics.
16	Test of Early Language Development -2nd ed. (TELD-2): (Hresko, Reid, Hammill, 1991)	2 to 7.11 years	Measures the aspects of form and content of expressive and receptive language in children. Includes expanded diagnostic profile extended age range and two alternative forms.
17	Mac Arthur Communicative Developmental Inventory *(CDI)* (Fenson, et al., 1993)	16-30 months	It is a newer norm-referenced test of language development in children, which relies on parent reports on a standardized questionnaire. It consists of 2 parts. Part I contains 680-word vocabulary production

			checklist, organized into 22 semantic categories. Part II is designed to assess morphological and syntactic development.
18	The Battelle Developmental Inventory Screening Test (BDIST)	6 months to 8 years old	It has a number of desirable features, including subtests for fine and gross motor, adaptive, personal-social, receptive and expressive language, and cognitive skills; a range cutoff and age-equivalent scores; and national standardization. The Receptive Language (RL) subtest, slightly more sensitive than the total BDIST but less specific, takes only a few minutes and thus is useful for prescreening in time-limited settings, such as pediatric practice.
19	The Wilson syntax screening test, (Wilson, 2000)	Pre KG to kindergarten	This uses 20 grammatical markers to detect morphological deficits.

(Source: Shipley and Mc Afee (1998); Mc Cauley (2001) and www.state.tn.us.

Indian Tests

There are very few screening tests, which are developed in India to assess children on their language abilities.

I. Screening Picture Vocabulary Test in Kannada (KPVT) [Sreedevi, 1988]

The test is applicable to children between age ranges of 3- 6 years. The test material consists of 30 pictures plates with each plate containing 4 black and white drawings. One among the 4 pictures is the target picture. The test plates are arranged in the order of increasing difficulty. KPVT can be used for children with delayed or deviant language.

Advantages

a) Screening language acquisition of Kannada speaking children

b) Identifying those children with comprehension deficiencies and

c) Planning therapy.

Limitations

a) It is applicable to only those children whose mother tongue is Kannada.

b) The test considers only the receptive aspect of vocabulary.

c) The age range considered is limited.

II. Screening Test for the Acquisition of Syntax in Kannada (STASK) [Vijayalakshmi, 1986]

Screening Test for the Acquisition of Syntax in Kannada (STASK) (1986) is the short form of TASK (Test of Acquisition of Syntax in Kannada) developed in 1981. STASK assesses the level of syntax acquisition in Kannada speaking children in the age range of 1-5 years. It appears promising both in identifying subjects with language-disorders and also in specifying the area of deficit in syntax. It also aids in therapy programme in the selection of fixing goals for therapy, developing therapy material and in assessing the outcome of therapy.

STASK has 50 items to test the verbal comprehension and expression of seven sentence types. The test makes use of toys and materials familiar to the children of Indian culture and some pictures for testing. STASK gives separate scores for comprehension and expression of different aspects of syntax of the child's verbal language. It also gives language age.

Advantage

a. STASK assesses both the expressive and comprehensive aspects of a wide range of syntax.

b. STASK aids in planning therapy and to monitor the outcome of the therapy.

Limitations

a. Applicability is limited to 1-5 years age group.

b. It can be applied only to children who speak Kannada.

I. ***A Syntax Screening Test in Tamil (SST) [Sudha, 1981]***

The syntax-screening test in Tamil helps:

a. To assess the syntactic development in children and

b. To identify the areas of deficiencies in syntax in children with language disorders.

The test was standardized on children in the age range between 2-5 years and three year old children with language-disorders. SST has 10 subtests:

(1) Negative
(2) Definite determiners
(3) Who questions
(4) Yes-No questions
(5) Persons
(6) Adjectives
(7) Tenses
(8) Post positions
(9) Comparative and Superlatives
(10) Pronominal constructions.

The stimuli are picture cards and responses are audio taped and later transcribed. The test has both expressive and receptive sections.

Advantages

a. Helps in assessing syntactic development in Tamil

b. Helps in identifying the areas of deficiencies in syntax.

Limitations

a. The test can be administered to normal children in the age range of 2-5 years.

b. This test is applicable to only those children whose parents speak Tamil and who live in a Tamil-speaking environment.

c. All the syntactic structures are not included in the test.

II. ***A Screening Picture Vocabulary Test (TPVT): [Bhuvaneshwari, 1993]***

It is designed to screen children in the age range of 3-6 years. The test material consists of 33 picture plates, with each plate containing 4 black and white line drawings. Among the 4 pictures one is a target picture and the other 3 are distracters. This tests comprehension and response expected is pointing to the pictures named.

Advantages

a. It helps in identifying children with delayed or deviant language.

b. Helps in planning the therapy programme.

Limitations

a. It is applicable to only those children whose mother tongue is Tamil.

b. The test considers only the receptive aspect of vocabulary.

c. The age range considered is limited.

The review of the literature suggests that language development in children is quite complex. Also, children require a host of interrelated linguistic aspects, each at certain stage of development. The rapidity and complexity in language development may be interfered by a few causative factors leading to disorders of language. There is a need to screen children for disorders of language so that language rehabilitation can be initiated as early as possible.

A comprehensive review of language screening tests indicates that there are western screening tests available for different age groups and linguistic aspects. Whereas, Indian screening tests either focus on vocabulary or syntax - receptive or expressive language assessment. Since cultural and socio-linguistic factors are crucial for language assessment, there is a need to develop a comprehensive tool to screen children on various linguistic features both for receptive and expressive aspects. Besides the above, since in India there is a great mismatch between the number of trained professionals and the clients, there is also an immense need to deprofessionalize the clinical services.

With the above perspectives, the present study aims to develop a Computerized Linguistic Protocol for Screening (CLiPS- Kan) in Kannada. The objective of the study is to develop a user-friendly screening tool that helps to screen children for language comprehension and expression skills in the age range of three to eight years.

METHOD

The objective of the study is to develop a Computerized Linguistic Protocol (in Kannada) for Screening children (CLiPS). The study also aims to trace the developmental patterns on various linguistic aspects in children. The gender difference, if any, in language acquisition will also be analysed.

The screening test is developed by selecting pictures from the project "production of language training material in major Indian languages", funded by UNICEF, which is published by Action Aid as "With Little Bit of Help- Early Language Training Manual".

This Early Language Training Manual (Karanth, Manjula, Geetha and Prema, 1999) was developed as an indigenous teaching materials, at affordable prices, for those who are identified as having delayed language acquisition. The instruction manual developed is designed to meet this need and serve as core teaching material in ten Indian languages spoken across India.

The material for the language training consists of 664 picture cards, designed to teach/elicit a variety of language forms, meaning and use. The pictures consist of simple line drawings true to the Indian cultural context. The requirement of children and adults, normal and handicapped, both from rural and urban areas have been considered in designing the pictures.

These pictures were field tested by field-investigators in ten languages in the age range of 3- 12 years, adults (literate and illiterate) and children with delayed

speech and language. This was done for assessing the suitability of the pictures to the Indian population. Based on the field-testing results, few pictures were eliminated and some were modified. The entire project was based on the Linguistic Profile Test (LPT) [Karanth, 1984].

The pictures are selected from this project because:

1. The pictures were field tested in various Indian languages.
2. The ambiguous pictures were removed based on the field-test results.
3. The pictures are black and white line drawings, which are easily replicable and culture free, so that they suffice for children of different places of India.

The present study was pursued along the following steps:

I. Development of the Computerized Linguistic Protocol for Screening (CLiPS).
II. Administration of the protocol.
III. Recording the responses.
IV. Analyses of the results.

I. ***Development of the Computerized Linguistic Protocol for Screening (CLiPS)***

a. Selection of pictures

The field-tested data of the UNICEF project was examined to choose pictures for developing the screening protocol. The pictures, which elicited 75%-100% responses from the subjects during earlier field-test, were selected and the pictures which were unambiguous and descriptive enough (as mentioned by earlier field tester) were selected. Thus the total number of pictures selected, which are distributed category-wise is 127.

b. Computerization of screening protocol

The selected pictures, which were equally distributed among different categories of Semantics and Syntax were scanned individually and stored in compact disc, which was loaded on to a laptop computer for presentation during screening. The pictures were either single, pairs or in fours depending on the purpose for which they are presented. Along with the pictures, the instruction manual was prepared with specific instructions for different categories of language. This instruction manual is enclosed in Appendix- C.

c. Test items

The test items comprises of a set of four pictures (single picture, as well as, set of 3-4 picture depending on the target parameter) containing black and white line drawings in each of the categories. The categories are arranged according to increasing order of difficulty, as given by Karanth and Suchitra (1993). The various categories are:

1. Lexical Categories
2. Antonym
3. Polar Questions
4. Syntagmatic Relationship
5. Paradigmatic Relationship
6. Semantic Similarity
7. Semantic Anamoly
8. Semantic Contiguity
9. Plurals
10. Affirmative-Negative Form
11. Interrogatives

12. Person-Number-Gender
13. Transitive
14. Intransitives
15. Causatives
16. Conditional Clauses
17. Conjunctions
18. Comparatives
19. Quotatives
20. Case Markers
21. Tenses
22. Participial Constructions.

The details of the items in each category are attached in Appendix- A. The pictures in each category are evenly distributed, so that the comprehension and expression tasks are given equal importance. The test material is given in a compact disc and the sample pictures are given in the Appendix- B.

II. Administration of the protocol

i. Subjects

60 normal subjects in the age range of 3-8 years were taken for the study. Six subjects (3 male and 3 females) in each half-yearly age range were tested across 10 age groups. The age groups are:

Table 2

Age groups of subjects

Group code	*Age Groups*	*Number of subjects*
31	3.1-3.6 years	6
311	3.7-4 years	6
41	4.1-4.6 years	6
411	4.7- 5 years	6
51	5.1-5.6 years	6
511	5.7-6 years	6
61	6.1- 6.6 years	6
611	6.7-7 years	6
71	7.1- 7.6 years	6
711	7.7-8 years	6
	Total	60

Criteria for subject selection:

1. Kannada speakers (either having Kannada as mother tongue or living in Karnataka and exposed to Kannada since birth).
2. No physical or sensory deformities.
3. Having speech and language appropriate to the age as per the parents'/ teachers' report.

ii Procedure

a. Test environment

The subject was seated comfortably in a quiet-room. The investigator conversed with the subject to have rapport. Then, the pictures were presented on the screen of Laptop one at a time.

b. Design

The order of presentation of comprehension and expression task in a particular category was varied in such a way that every alternate subject in an age group was tested for comprehension and the other for expression, thus counterbalancing the tasks for comprehension and expression. Therefore, out of 6 subjects in each age group, 3 subjects had comprehension task to be performed first and other 3 subjects had expression task to be performed first. This counterbalanced design was adapted to see whether the performance of children differs when presented with comprehension or expression.

c. Data

The subject was instructed according to the specific instructions (comprehension and expression separately) for different categories to respond appropriately (E.g. in Lexical item: what is this? for expression task). No subject was given any cues or prompted for response elicitation. The time taken for testing was different across age groups. While the younger age group performed on an average within 60 minutes to 75 minutes, the older age group completed earlier i.e., about 30 minutes to 40 minutes on an average.

The responses were elicited by showing the pictures one after the other. The subject's responses were recorded on the scoring sheet. The scoring sheet is given in the Appendix- D. The subjects were provided reinforcement at the end of the testing.

iii. Recording Responses

The subjects' responses were scored as correct ( ) when a target response (E.g. 'Nurse' for the picture of 'Nurse') or equivalent response (E.g. 'Sister' for the picture of 'Nurse') is obtained and when there was an incorrect response it was recorded verbatim in the data entry format.

iv. Analysis of the data

The data was subjected to qualitative and quantitative analyses. Results are discussed in the following chapter.

RESULTS AND DISCUSSION

The aim of the present study is to develop the Computerized Linguistic Protocol for Screening children (in Kannada) and to trace the developmental pattern on various linguistic aspects. The data obtained was subjected to the following statistical analyses:

1. Mean and Standard Deviation (SD).
2. t-test (Paired).
3. One-way ANOVA (Duncan's multiple range test).
4. Item Analysis.

In addition to, the quantitative analysis, detailed qualitative analysis of the errors was also done.

I. Mean and SD scores across ages

The raw scores of 60 children (three to eight years age) were complied. The Mean, Standard Deviation and t-values were computed and presented in Table 3. Table 3 indicates that the mean scores ranged from 73.50 to 138.16 for a maximum score of 140. The mean scores increased gradually from three years to eight years of age, by having reached almost maximum at the age of eight years. It indicates that the language development is almost complete by the age of eight years and later it reaches a plateau. This finding is well supported in the literature studies [Rukmini (1994); Sudha (1981); Sreedevi (1988); and Bhuvaneshwari (1993)] on language development, which report that there is a hierarchal development of language in children.

The SD was highest in the age groups 311, 41 and 411. This indicates that acquisition of language skills is not stable across children in these age groups. The lower SD in other age group indicates that the acquisition of the language skill is stable at the age group 711. The Figure- 1 indicates the mean language scores across age groups, which shows the developmental trend.

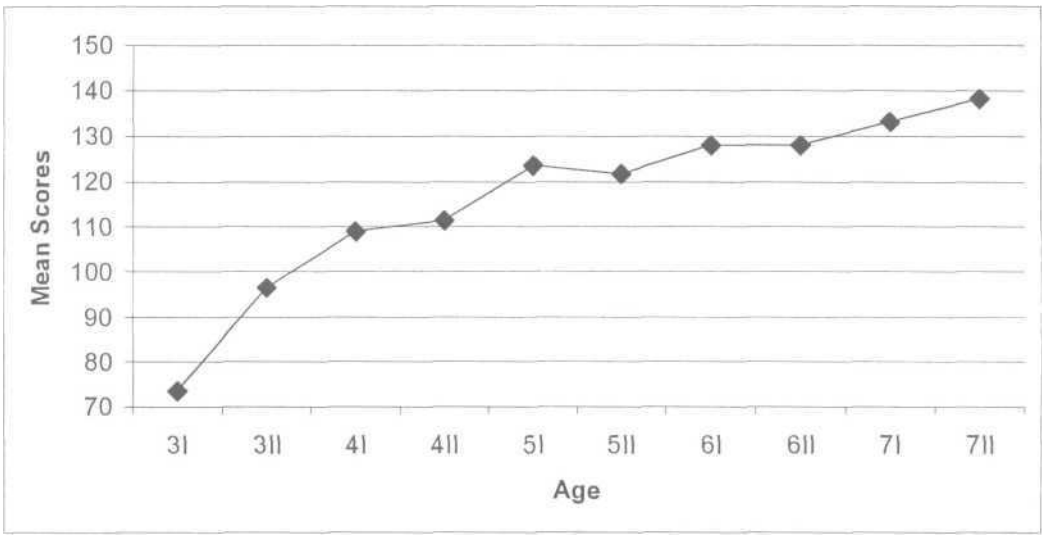
Table 3

Mean and SD scores according to ages

Age	Mean (Max =140)	SD
3I	73.50	5.70
3II	96.50	10.1
4I	109.00	11.7
4II	111.33	10.4
5I	123.50	6.26
5II	121.66	7.47
6I	128.00	7.02
6II	128.00	7.83
7I	133.16	4.48
7II	138.16	1.95

Figure 1

Mean scores across age groups



II. Development of comprehension and expression

Although there is a developmental trend in language development, to check whether the same developmental trend is seen for both comprehension and expression task. The Mean, Standard Deviation and t-values on comprehension and expression tasks are calculated and given in the Table- 4 and the Mean scores are depicted in the Figure-2.

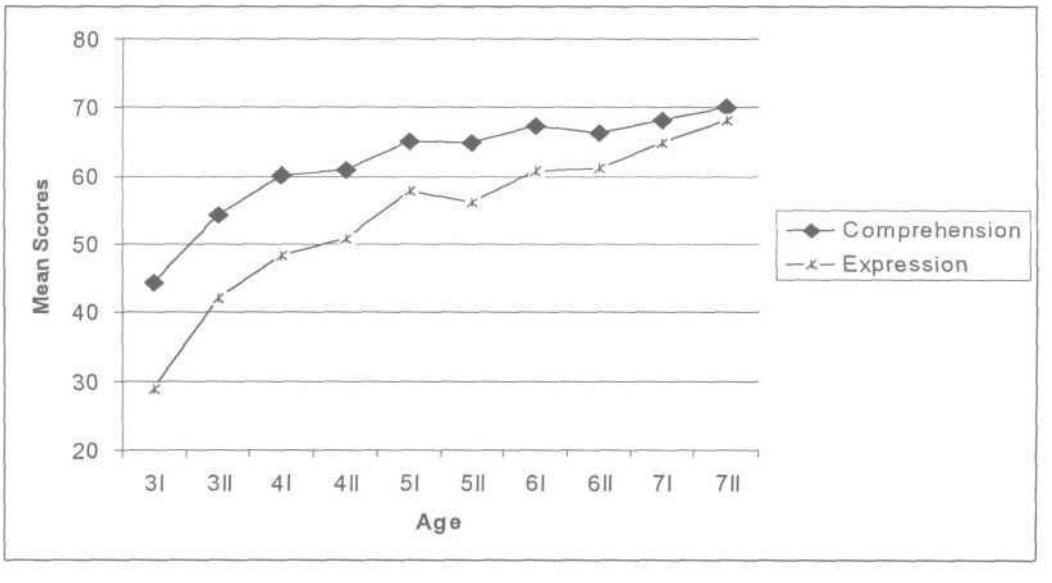
Table 4

Scores on comprehension and expression across age groups

Age	Compression		Expression		t-values	Sig (2-tailed)
	Mean (Max= 70)	SD	Mean (Max=70)	SD		
3I	44.5	2.14	29.00	6.24	4.691	.005
3II	54.33	5.79	42.16	4.63	10.980	.000
4I	60.16	3.43	48.33	0.91	4.342	.007
4II	61.00	3.55	50.83	6.59	6.353	.001
5I	65.16	2.85	57.83	3.80	6.102	.002
5II	65.00	2.51	56.16	6.30	3.578	.016
6I	67.33	2.28	60.66	5.64	2.988	.031
6II	66.33	3.48	61.16	4.94	3.675	.014
7I	68.16	1.57	65.00	3.10	3.124	.026
7II	70.00	0.00	68.16	1.95	0.795	.462

Figure 2

Comprehension and expression scores across age groups



It was observed that the mean scores of comprehension were better than expression across all the age groups. The younger age group had wide difference between comprehension and expression in the mean scores. The gap reduces with age and at highest age range tested (711) the difference was negligible. But the mean scores did not reach maximum even at the highest age group, this suggests that language development continues even after eight years of age.

The SD scores are almost decreasing across the age groups in comprehension and variable across ages in expression task. The t-test indicates that there is significant differences between comprehension and expression in all age groups expect at the age group of 711, there is no significant difference between comprehension and expression. This indicates that by eight years the expression is as good as comprehension ability of the children.

This finding is in agreement with the previous studies by Rukmini (1994), Sudha (1981); Menyuk, (1977); Shipley, Smith and Gleitman, (1978); Bloom, Miller and Hood, (1978); de Villers and de Villers, (1978); and Vijayalakshmi, (1981). These authors found that the comprehension was always better than the expression.

V. Development of comprehension and expression in semantics

The development trend was found in comprehension and expression. To find whether the same developmental trend is seen in comprehension and expression of semantics, the Mean, Standard Deviation and t-values of comprehension and expression scores in semantics was computed and are given in Table- 5.

Table 5

Mean and SD of comprehension and expression in semantics

Age	Comprehension		Expression		t-values	Sig (2-tailed)
	Mean (Max = 38)	SD	Mean (Max = 38)	SD		
3I	26.00	2.51	17.16	3.67	4.296	.008
3II	28.50	2.43	22.50	2.62	5.636	.002
4I	31.33	3.14	25.50	5.79	3.693	.014
4II	31.33	2.98	26.83	4.13	3.922	.011
5I	34.83	2.60	31.00	2.76	3.781	.013
5II	35.50	1.60	30.33	4.53	2.618	.047
6I	36.83	1.46	33.50	2.56	2.654	.045
6II	35.50	3.20	33.16	3.33	3.796	.013
7I	36.83	0.89	35.00	1.63	2.607	.048
7II	38.00	0.00	36.83	0.68	3.796	.013

From the Table- 5, it is observed that the comprehension scores are better than the expression across in all age groups. And there is a developmental trend observed in these children. The t-scores show that there is a significant difference between comprehension and expression task at all age levels. Even at age of 711 (7.6 to 8 years) there is a significant difference between comprehension and expression in semantics task, which can be attributed that the child even this age does not express all of his/her semantic abilities acquired.

VI. Development of comprehension and expression in syntax

The developmental trend was found in comprehension and expression in overall language ability and in semantics. To find whether the same developmental

trend seen in comprehension and expression of syntax, the Mean, Standard Deviation and t-values of comprehension and expression scores in syntax were computed and are given in Table- 6.

Table 6

Mean and SD of comprehension and expression in syntax

Age	Comprehension		Expression		t-values	Sig (2-tailed)
	Mean (Max =32)	SD	Mean (Max =32)	SD		
3I	18.50	2.62	11.83	2.96	3.093	.027
3II	25.83	3.62	19.66	2.74	8.770	.000
4I	28.83	1.57	22.83	3.62	4.174	.009
4II	29.66	1.79	24.00	2.76	4.949	.004
5I	30.33	0.74	26.83	1.95	5.217	.003
5II	29.50	1.70	25.83	2.33	3.051	.028
6I	30.50	0.95	27.16	3.57	2.370	.064
6II	31.33	1.10	28.00	2.16	3.371	.020
7I	31.33	0.74	30.00	1.82	2.390	.062
7II	32.00	0.00	31.33	1.49	1.000	.363

From the Table- 6, it is observed that the comprehension scores are better than the expression across in all age groups. There is a developmental trend observed. The standard deviation scores were less in comprehension than expression. The t-test indicates that there is a significant difference between comprehension and expression performance at all age levels expect at the age 711 (7.6 to 8years) where there is no significant difference between comprehension and expression task. This indicates that by eight years the expression is as good as comprehension ability of the children. Children express all of his/her syntactic abilities that they have acquired. This result is

in agreement with our previous results that there is no significant difference between comprehension and expression at age of 711. This finding is in support of study by Vijayalakshmi (1986) and Sudha (1981).

IV. Development of semantics and syntax

To check whether there is also a parallel development of both syntax and semantics, further analysis was taken up. The Mean, Standard Deviation and t-values of semantics and syntax are computed and given in Table- 7 and Mean scores are depicted in the Figure- 3.

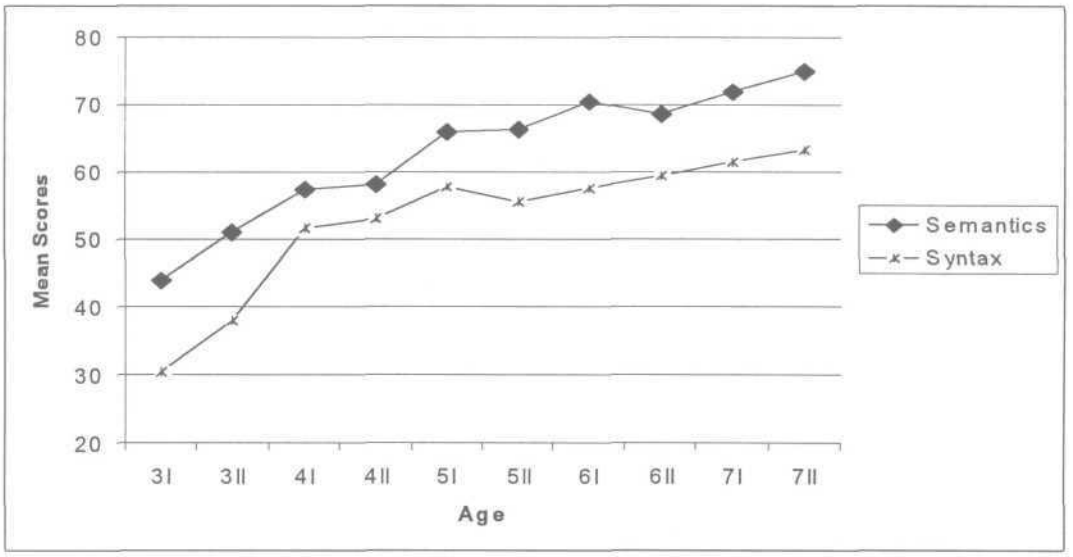
Table 7

Mean and SD of semantics and syntax

Age	Semantics		Syntax		t-values	Sig (2-tailed)
	Mean (Max = 76)	SD	Mean (Max =64)	SD		
3I	43.80	4.44	30.33	2.86	6.291	.001
3II	51.00	4.47	37.91	9.00	3.297	.022
4I	57.33	8.25	51.66	4.57	1.982	.104
4II	58.16	6.74	53.16	4.59	2.266	.073
5I	65.83	4.87	57.66	2.13	4.369	.007
5II	66.33	4.81	55.50	2.87	7.608	.001
6I	70.50	2.98	57.60	4.18	14.105	.000
6II	68.66	6.39	59.33	2.62	3.568	.016
7I	71.83	2.40	61.33	2.49	11.864	.000
7II	74.83	0.68	63.33	1.49	20.436	.000

Figure 3

Mean scores of semantics and syntax



It was observed that the mean scores across age groups were better for semantics in comparison to syntax. A gradual improvement in performance of the children in both semantics and syntax was observed. However, performance on semantics was always better than syntax across age groups.

SD scores were high in age group (41 and 411) and (311) in both semantic task and syntax task respectively. There is significant difference between semantics and syntax in all age groups expect at age range 41 (4.1 to 4.6 years). The t-test also shows show a highly significant difference at higher age groups, this indicates that for development of semantics and syntax different skills are required.

Rukimini (1994) had compared the semantics and syntax tasks across three to four year old and found better scores for syntax than semantics. The results of the present study are not in support of the above.

The results of the study in general suggests a clear developmental pattern in both syntax and semantics skills. Semantics always being ahead of syntax development, the second objective of the study to trace the developmental pattern is, thus, achieved.

III. Language development in boys and girls

The third objective of the study was to see if there is any difference between boys and girls in the performance on CLiPS. Therefore, the Mean, Standard Deviation and t-values of boys and girls across age group were computed and given in the Table-8. The Mean scores are depicted in the Figure- 4.

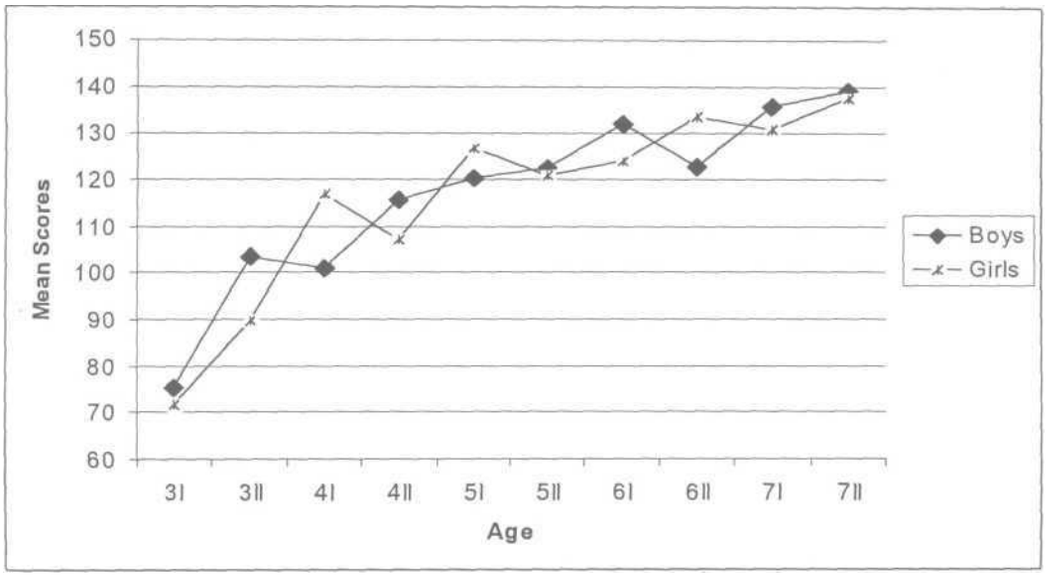
Table 8

Mean and SD of boys and girls

Age	Boys		Girls		t-values	Sig (2-tailed)
	Mean (Max = 140)	SD	Mean (Max= 140)	SD		
3I	75.3	7.40	71.66	1.88	0.628	.594
3II	103.33	6.79	89.66	8.25	1.409	.294
4I	101.00	9.42	117.00	8.48	1.622	.246
4II	115.66	11.4	107.00	6.97	2.726	.112
5I	120.33	6.64	126.66	3.77	1.686	.234
5II	122.33	4.71	121.00	9.41	0.144	.899
6I	132.00	4.89	124.00	6.53	1.139	.373
6II	122.66	7.40	133.33	3.29	1.416	.293
7I	135.66	1.69	130.66	4.98	1.987	.185
7II	139.00	0.81	137.33	2.35	0.762	.525

Figure- 4

Mean scores across boys and girls



The Mean scores indicated that boys performed better than girls in the age groups 31, 311, 411, 511, 61, 71, 711 and girls performed better than boys in the age groups 41, 51, 611. The t-test indicates that there is no significant difference in performance between boys and girls in any of the age groups. This finding is in support of the previous study by Kathyayani (1984) in which she found that there is no clear distinction of girls' and boys' performance, in certain age groups girls performed better than boys and the vice versa in certain other age groups.

Sreedevi (1988) also found no clear distinction in performance between the genders across various age groups. Templin (1957) in a large scale found that girls tend to exceed perfonnance in articulation of sounds at the older ages and the boys in the word knowledge, yet the differences between the genders were somewhat less pronounced than is frequently stated. O' Donnell, Griffin and Norris (1967) and Bliss,

Allen and Wrasse (1977) also support the finding. Mc Caulay (1978) reports that the females' superiority of language might be more of an apparent nature than a real one. If any difference exists it is only of transient nature in language acquisition.

Bhuvaneshwari (1993) found that boys had higher Mean values than girls. This is contradictory to the literature that girls have better language ability than boys. Mc Carthy (1954) also reports that girls are better than boys in linguistic performance.

VII. Age grouping according to different tasks

CLiPS incorporates a large number of linguistic parameters. It is necessary to see if language development is uniform across various parameters also across the age groups. Hence, one-way Analysis of Variance (ANOVA) was done. Table-9 gives grouping of tasks with respect to age groups.

Table- 9

Age grouping according to different tasks

Sl. No	Task		ANOVA		Grouping on Duncan's post hoc test
			Between groups	Within groups	
1.	Overall	Comprehension	0.05	NS	3I 3II 4I = 4II 5I = 5II=6I = 6II = 7I 6I = 6II = 7I = 7II
		Expression	0.05	NS	3I 3II = 4I 4I = 4II 4II = 5I = 5II 5I = 5II =6I = 6II 5II =6I = 6II = 7I 6I = 6II = 7I = 7II
2.	Semantic	Comprehension	0.05	NS	3I= 3II 3II= 4I=4II 5I=5II=6I=6II=7I=7II
		Expression	0.05	NS	3I 3II=4I=4II 4II=5I=5II 5I= 5II=6I=6II 6I=6II=7I=7II
3.	Syntactic	Comprehension	0.05	NS	3I 3II 4I=4II=5I=5II=6I=6II=7I 4II=5I=5II=6I=6II=7I=7II
		Expression	0.05	NS	3I 3II=4I 4I= 4II=5I 4II=5I=5II=6I 5II=6I=6II=7I 6I=6II=7I=7II

Table- 9 suggests that there was no significance difference within the age groups either in the overall performance or in syntax and semantics. However, significant difference ($P< 0.05$) was observed between the age groups in the overall performance on comprehension and expression tasks as well as specific syntax and

semantic tasks. Duncan's post-hoc analysis was further carried out to draw age equivalence in performance, as shown in Table- 9. Appendix - E gives details of short version of CLiPS (Quick - CLiPS) for agewise screening of language skills.

VIII. Counterbalancing

The counterbalanced design for administration of comprehension and expression tasks was adapted to see whether there exists a difference in response if order of presentation is different. Thus the Mean, Standard Deviation and t-values for order of presentation across different age groups are given in Table- 10.

Table 10

Mean and SD of comprehension first and expression first task

Age	Comprehension first		Expression first		t-values	Sig (2-tailed)
	Mean (Max = 140)	SD	Mean (Max= 140)	SD		
3I	71.00	5.88	76.00	4.24	3.273	.082
3II	93.33	11.58	99.66	7.31	1.129	.376
4I	100.16	11.79	111.00	14.69	0.332	.772
4II	111.66	12.91	105.33	8.33	1.820	.210
5I	124.66	0.94	122.33	8.65	0.346	.762
5II	119.33	7.13	124.00	7.07	0.500	.667
6I	131.33	5.73	124.66	6.59	0.769	.522
6II	128.33	7.36	127.66	8.25	0.085	.940
7I	133.66	1.24	132.66	6.18	0.222	.845
7II	137.33	2.35	139.00	0.81	0.945	.444

The raw scores of children who perfoiTned comprehension task first and those who performed expression task first were complied. Mean and SD was computed and t-test was done. Table- 10 indicates no significant difference between the order of

presentation. Thus the results suggest that the order of presentation does not influence the performance of children.

IX. Children with language delay:

CLiPS is developed as a screening tool. Therefore, the number of children identified as low achievers was noted considering the Mean and SD range to check whether CLiPS serves the purpose of screening. Around 10% of children of the study (6/60) performed below the Mean and -1 SD (for the particular age group) and 15% of children (9/60) performed above the Mean. The findings are depicted in Table-11 as low achievers and high achievers.

Table- 11

Number of Low achievers and High achievers in semantics and syntax

Age	Semantics		Syntax	
	Low achievers	**High achievers**	**Low achievers**	**High achievers**
3I	-	1	1	1
3II	1	1	-	2
4I	1	1	-	1
4II	-	1	1	1
5I	1	-	-	1
5II	-	2	1	1
6I	1	1	1	1
6II	1	-	-	1
7I	1	1	1	-
7II	-	1	1	-
Total	**6**	**9**	**6**	**9**
Percentage	**10**	**15**	**10**	**15**

This result is in support of the prevalence rate by Rossetti (1990) who reported that approximately 5% to 10% of children have some type of speech and/or language impairment.

X. Order of acquisition

Acquisition of language is not uniform across different linguistic parameters. In order to check the order of acquisition, item analysis was carried out. The tasks that were performed by 75% of children were treated as those achieved at the particular age group. Details are presented in Table-12.

Table-12

Age-wise Acquisition of Linguistic parameters

Age	Semantic	Syntax
Below 3 years	Body parts Vehicle	Case markers-in & on
3I	-	Case marker-By
3II	Animals Dress House and furniture	Interrogatives Intransitives Quotatives Casemarkers- To & Possessive
4I	Utensils	Case marker-With
4II	Syntagmatic Relationship	PNG Markers Conjunctions
5I	Color Flower Birds Antonym Semantic similarity	Affirmative and Negatives Conditionals Comparatives
5II	Polar Questions Semantic anomaly Semantic Contiguity	-
6I	Vegetable	-
6II	-	-
7I	Person Insects Paradigmatic Relationship	Plurals Participial Constructions
7II	Flowers	Tenses

Qualitative analysis

The qualitative analysis of the performance of children on CLiPS suggested a clear developmental trend in language acquisition. The analysis also suggests that development of comprehension leads development of expression. And there was no clear distinction in language acquisition between boys and girls.

Although a definite trend in language acquisition was quite clear from the above, the qualitative analysis of errors of children revealed interesting findings. The errors are summarized under the following headings:

1. Lexical Category
2. Semantics
3. Syntax

1. Lexical Category

The responses observed in this category are:

1. The younger children in the age group 3 years -3.6 years used categoiy head for most of the lexical items. E.g. /pakshi/ (bird) for /gini/ (parrot) instead of naming the specific word.
2. One child in the age range of 4.1 years to 4.6 years and 6.6 years to 7 years also used the category head.
3. The various alternate responses given by 3. 1 *years - 3.6 years* are:
    a. Explanation of picture instead of naming the picture. E.g. /idu nalli u:Ta maDadu/ (cook in this) for /pa:ttre/ (vessel).

b. Use actions to indicate the item instead of naming them. This was found in the intransitives category. E.g. showing the action of bird flying instead saying orally.

c. Explained the use of object instead of naming them. E.g. For Bed-the response was /malikolladu/ (sleeping).

d. When the response is not known, the response /gothilla/ (don't know) was observed frequently in these children.

e. Imitating the sounds of birds and cries of animals was found instead of naming them.

2. Semantics

a. Color naming

Children in the age range of 3.1 years - 3.6 years, who were studying in English medium, understand color names better, if it named in English rather than naming it in Kannada. This shows that colors are better learnt in English than in Kannada.

b. ***Code mixing***

3.7 years - 4 years

In plurals it was found. E.g. /eles/ instead of/elegaLu/.

6.7 years - 7 years

In plurals one child responded /fishgaLu/ for /mi:nugaLu/ (fishes). And /cha:ks/ for /cha:kugaLu/ (knives).

7.7 years to 8 years

Code mixing was observed in plurals in one child /eles/ instead of /elegaLu/ (leaves).

c. Code switching

3.7 years to 4 years

It was observed in one of the item-mango. The child named as /man ga/ (mango) [Tamil word] instead of a Kannada word /mavina hannu/ (mango).

4.1 years to 4.6 years

Code switching was present in one of the children. Tamil words: /kattil/ (cot) and /kodam/ (pot).

3. Syntax

Children in the age range of 3.1 years - 3.6 years responded by saying /e:no he:lta ida:ne/ (he is saying something) or /he.ita ida:le/ (she is saying something) but failed to use quotative markers. This suggests that use of quotation is late to develop in the hierarchy of language acquisition.

Overgeneralization

Children tend to use learnt words in contexts where they didn't know the response.

4.1 years — 4.6 years

a. In antonyms category, /channagi ide/ (it is nice) or /channagi illa/ (it is not nice) is said instead of naming the opposites. Thus children use the acquired grammatical structures for all the other structures.

b. Uses /ja:sti/ (more) for plurals instead of using plural markers.

4.7 years - 5years

a. In comparatives, uses /ja:sti/ (more) and /o:si/ (less).

5.1 years -5.6 years

a. Child uses the word 'straight' for /saNNa/ (thin).

b. Most of the children till this age not naming the person 'Nurse', they continue to use the alternate terms or describe what she does. This can be because that the noun 'nurse' is not been used frequently in Kannada.

6.1 years - 6.6 years and 6.7 years to 7 years

a. Child uses /chikka/ (small) instead of the word /saNNa/ (thin).

7.1 years - 7.6 years

a. An interesting response observed in this age group is one child using the word /cuttinger/ for /barber/. Nominal is derived from the action.

General Observations

a. Code switching is present in only the lexical items.

b. In Kannada pronouns and the conjunction 'and' are used by children, this condition is observed even in adults. E.g. In pronouns children uses /huDuga/ (boy) for /avanu/ (he). In conjunction children uses /huDuga huDugi/ (boy girl) instead of/huDuga matte huDugi/ (boy and a girl).

c. When the comprehension is performed first followed by the expression task, although there was no significance difference in the quantitative analysis, the child is getting better oriented to the specific category, so the response is quick and confident.

d. 'Barber' is a word, which is not used by all children; only the children of educated family were using it. Other children give only the description of it.

e. Most of the children find it difficult to respond by combining two pictures in the participial constructions.

f. While the western literature suggest that children acquire past tense first. In the present study, children acquired tense in the order: present, past and future.

g. Code mixing was observed only in the bound moipheme and it is observed across age group.

h. Children who cannot perform polar questions usually substituted it with the wh- questions.

i. In Quotatives, children take time to respond instead of describing the picture,

j. In causatives, children responded by saying by what they usually 'cry for' but not to the picture depicted,

k. In semantic contiguity, matching stool with the table is acquired later than compared with other items. This gives an opinion that the abstractness involved in matching this more than compared to other items in this category.

1. Computer served as an incentive for the child to perform the test. Children like sitting in front of it, and performing task in it.

m. Pictures themselves are interesting for the children; it also gives direct response from the children,

n. It is noted that mostly in comparatives, overgeneralization is observed.

SUMMARY AND CONCLUSIONS

Language is the knowledge of a code for representing ideas about the world through a conventional system of arbitrary signals for communication. Language is a complex combination of several component rule system and it can be divided into three major components: Form, Content and Use (Bloom & Lahey, 1978). 'Form' includes syntax, morphology and phonology-those components that connect sounds or symbols with meaning, content encompasses meaning or semantics and the 'use' comprises of 'pragmatics' (Bloom & Lahey, 1978). This language ability can be affected in a child leading to language disorder. The complexity of process involved in language needs to be analyzed for a better understanding of a child with language disorder. Alternately, in order to identify a child with language disorder, a comprehensive tool for screening is essential.

The present study is aimed to develop a Computerized Linguistic Protocol (in Kannada) for Screening children. The study also aimed to trace the developmental patterns on various linguistic aspects in children. The gender difference, if any, in language acquisition was also analysed. Keeping the view the great mismatch between the number of professionals and the number of clients who are in need of services, the former being too low, a user-friendly screening protocol that is easily accessible by testers is devised with the aim of deprofessionalizing the screening program.

The screening test is developed by selecting pictures from the project "production of language training material in major Indian languages", funded by

UNICEF, which is published by Action Aid as "With Little Bit of Help- Early Language Training Manual".

These pictures were field tested by field-investigators in ten languages on normal children in the age range of 3- 12 years. Literate and illiterate adults as well as children with delayed speech and language were also tested. This was done for assessing the suitability of the pictures to the Indian population. Based on the field-testing results, few pictures were eliminated and some were modified. For the purpose of developing the screening protocol, the field-tested data of the UNICEF project was examined to choose pictures for the present screening test. The pictures, which elicited 75%-100% responses from the children during earlier field-test, the pictures which were unambiguous and descriptive enough (as mentioned by earlier field tester), were selected. Equal number of pictures, in the categories to test Semantics and Syntax in both comprehension and expression skills were scanned individually and stored in the compact disc and then loaded on to the laptop for presentation during testing.

Sixty normal children in the age range of 3-8 years were selected for the study. Six children (3 male and 3 females) in each half-yearly period were tested across 10 age groups. During testing each child was made to sit comfortably in a quiet-room. The investigator conversed with the child to have rapport. Each child will be instructed according to the specific instructions for different categories and then the pictures were presented on the screen of Laptop one at a time.

The order of presentation of comprehension and expression task in a particular category was varied in such a way that every alternate child in an age-group was given a comprehension or expression task to be performed first, thus counterbalancing the

comprehension and expression skills. Out of 6 children in each age-group 3 had comprehension task to be performed first and other 3 children had expression task. This change in order was to check the difference in response when comprehension task was performed first and vice versa.

The data was subjected to qualitative and quantitative analyses. In quantitative analysis the data was subjected to Mean, Standard Deviation, t-test (paired), One-way ANOVA with Duncan's multiple range test and item analysis. The results of the study are as follows:

1. Analysis of the group data indicated a clear developmental pattern in language acquisition by children in the age range of 3 - 8 years.
2. Comprehension abilities were better than the expression abilities across all the age groups under the study.
3. There was no significant difference in the performance of boys and gills on CLiPS.
4. Acquisition of semantics was earlier to that of syntax.
5. 10% of children (6/60) were identified as having language disorder.
6. Item analysis of the screening protocol suggested that the CLiPS could be further shortened (Quick - CliPS) for quick screening of children in the different age groups. The validity and reliability of quick-CLiPS needs to be investigated.
7. The counterbalanced design of the present study between comprehension and expression tasks did not indicate any significant difference between the two presentations suggesting that either of them does not influence the performance of children.

8. Qualitative analyses of performance of children revealed some interesting observations:
    a. Although the children were native speakers of Kannada, exposure to English in schools and surrounding environment had an impact on their language performance. This was evident through errors such as code-mixing, code switching, overgeneralization, derivation of code mixed words, etc.
    b. The low achievers, identified as those with language disorder did not name the specific lexical item. Rather, labeled the category head (E.g: Cloth for fork). Such observations lead to a speculation as to whether such children who fail to name the specifics of lexical items, are at risk for language disorder?. The observations, however, needs to be investigated further.

Implications of the study

1. CLiPS can be used as a screening tool to identify children with language disorder.
2. Since CLiPS can be administered with the help of computer, the procedure for screening can be made uniform across different clinical set-up.
3. The instructions for CLiPS can be easily translated into other languages and the pictures can be used to screen children who are non-Kannada speakers*.

* In the course of the study CLiPS was tried out on 3 children from Tamil, Telugu and Malayalam background. CLiPS was found to be useful.

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APPENDIX - A

INSTRUCTION MANUAL

I. *Semantics*

1. *Lexical categories*

Here for comprehension task a picture containing four items (2 items are stimuli and other two are distracters) is shown to the child. For expression, one picture is shown at a time. The instructions are:

Comprehension: Show me the Lion? (Item A-Cl).

Expression: What is this? (Item A-El).

2. *Antonyms*

Comprehension: Show me the big chair/ small chair (Item ANT-CI)

Expression: Name the picture? (ItemANT-El)

3. *Polar Questions*

One picture at a time is shown to the child.

Comprehension: Is there water in the glass? (Item PQ-C1)

Expression: Role reversal. (Item PQ-El)

4. *Syntagmatic Relationship*

One picture card is shown at a time, which contains four pictures in it.

Comprehension: Show me the picture that is different from others (Item SR-C1)

Expression: Explain why it is different from others? (Item SR-E1)

5. *Paradigmatic Relationship*

One picture card is shown at a time, which contains four pictures in it.

Comprehension: Choose the picture that is different from others. (Item PR-C1)

Expression: Explain why it is different from others? (Item PR-El)

6. *Semantic Similarity*

Comprehension: What is common in these pictures? (Item SS-Cl)

Expression: Describe what is highlighting commonality. (Item SS-El)

7. *Semantic Anamoly*

Show one picture at a time.

Comprehension: She is your father? (Item SA -C2)

Expression: "Moon comes in the day"; say whether it is correct or wrong? Why it is wrong? Then what is correct? (Item SA -El)

8. *Semantic Contiguity*

Comprehension: Match the picture of the side-A to side-B. (Item SC)

Expression: Describe why the picture is matched. (Item SC)

II. Syntax

1. *Plurals*

Comprehension: Show the picture of boys?(Item PL-C1)

Expression: Name the picture? (Item PL-El)

2. *Sentences types*

{Affirmative — Negative Sentences)

Comprehension: Is this table? (Item AN-C1)

Expression: Role reversal. (ItemAN-El)

(Interrogatives)

Comprehension: What is the boy doing? (Item IN-C1)

Expression: Role reversal. (Item IN-El)

3. *Person-Number-Gender Markers*

Comprehension; Show me the picture of boy cycling (Item PNG-Cl)

Expression: Name the pictures? (Item PNG-E1)

4. *Transitive*

Comprehension: What is the boy doing? (Item T-Cl)

Expression: Name the picture? (Item T-El)

5. *Intransitive*

Comprehension: What is the bird doing? (Item IT-Cl)

Expression: Name the picture? (Item IT-E1)

6. *Causatives*

Comprehension: Mother made the child to brush the teeth- say whether it is correct / wrong? (Item CAU-C1)

Expression: Describe the picture? (Item CAU-E1)

7. *Conditionals*

Comprehension: What will you if it rains? (Item COND-C1)

Expression: When do you sleep? (Item COND-E1)

8. *Conjunctions*

Comprehension: Boy or girl is swinging? - Is it correct or wrong? (Item CONJ -C1)

Expression: Describe the picture. (Item CONJ-E1)

9. *Comparatives*

Comprehension: Who is taller? (Item COMP-C1)

Expression: Name the picture? (Item COMP-El)

10. *Quotatives*

Comprehension: *

Expression: Describe the situation in the picture then tell me what the person is telling to other? (Item Q-El)

11. *Case Markers*

Comprehension: Is the cat in the bucket? (Item CM-IN)

Expression: Name the picture? (Item CM-IN)

12. *Tenses*

Comprehension: Show me the picture of 'the girl is going to comb'? (Item TEN-Cl)

Expression: Name the pictures? (Item TEN-E1)

13. *Participial Constructions*

Comprehension: *

Expression: Describe the picture? (Item PC-El)

* Expression task was only earned out in these two categories, which is based on the assumption that if expression were achieved, the comprehension would have been achieved. This is considered because the comprehension task of these could not be depicted using pictures.

APPENDIX- B

A description of sub sections and the items under each are given below:

I. Semantics

Here lexical items are discriminated on the basis of their semantic traits.

1. *Lexical categories*

A unit of vocabulary is generally referred to as a lexical item. In the present study the various lexical categories included are Animals, Vegetables, Fruits, Body Parts, Dress, Vehicles, House and Furniture, Utensils, Person, Color, Flower, Body Parts, Insects.

2. Antonym

It is a term used in semantics to refer to oppositeness of meaning. E.g.Thin-Fat.

3. *Polar Questions*

A term used for the system of positive and negative contransitivity found in a language. These questions elicit yes/no responses. E.g. is there water in the glass?

4. *Syntagmatic Relationship*

The relationships between constituents (syntagms-refer to the sequential characteristics of speech) in a construction are called syntagmatic relation. E.g. baby is sleeping, baby is eating.

5. *Paradigmatic Relationship*

A term in linguistics for the set of relationships a linguistic unit has with other units in specific context. E.g. apple, banana and orange- Boy.

6. *Semantic similarity*

This expresses the inherent relationship between the items mentioned or the feature, which is common/present for a particular set of items. E.g. Woman is common person who is present in all of the pictures.

7. *Semantic Anamoly*

These are statements, which contradict facts. E.g. Moon comes in the Day.

8. *Semantic Contiguity*

These are relationships defining the relations of noun and verb or any two objects, which is related in some sense. E.g. Hen- Egg.

II. Syntax

1. *Plurals*

It represents more than one number of items/person/things. E.g. Boy-Boys.

2. Affirmative -Negative Form

Affirmative is the confirmation statement that agrees to the message conveyed in the previous statement or it can be a statement by itself. E.g. Yes, he is sleeping.

A negative is a fonnant which combines with parts of the sentence to constitute negation in sentence. E.g. No, he is not sleeping

3. Interrogatives

Interrogatives involve a question word that specifies the kind of information being requested, such as location (where), time (when), and so on. E.g. What are you doing?

4. *Person Number and Gender (P.N.G) Markers*

Person: - A category used in grammatical description to indicate the nature of the participants in a situation. Usually a three-way contrast is found. First person in which the speaker refers to himself, or to a group usually including himself, (E.g. I, We). Second person, in which the speaker typically refers to the person he is addressing (E.g. You) and third person, in which, other people or things are referred to (E.g. he, she, it, they).

Number: indicates the number of persons. The other one is self-explanatory. E.g: he is climbing, she is climbing, and they are climbing etc., for both reception and expression.

5. *Transitive*

A category used in the grammar analysis of clause/sentence constructions with particular reference to the verbs relationship to dependent elements or structure. Transitive refers to a verb, which can take a direct object. E.g. she is eating banana.

6. *Intransitives*

Intransitive is one, which cannot take a direct object. It is simply action or an event. E.g. Bird is flying.

7. *Causatives*

A causative is grammatical category used to refer to the causal relationship between alternative versions of a sentence. E.g.: Mother made her son to write.

8. *Conditionals*

A term used in grammatical description to refer to clauses whose semantic role is the expression of hypothesis or conditions. A particular condition is present /will be present based on the previous/forthcoming act. E.g. I will hold an umbrella if it rains.

9. *Conjunctions*

Complex sentence formation occurs when two or more clauses are bound together, or one clause is embedded in another. Conjunctions connect two sentences. E.g. Boy is crying because he fell down.

10. *Comparatives*

It compares the characteristics of two different lexical items, which are semantically related. E.g. This tree has more fruits than the other.

11. Quotatives

This is a term used to represent both the meaning and the construction of sentence elements. It quotes what the speaker is intend to say or quotes what the speaker is saying. E.g. the boy is telling his friend that "shall we go by bus".

12. *Case Markers*

A grammatical category used in the analysis of word classes to identify the syntactic relation between words in a sentence through such contrasts as normative, accusative, etc. or a form taken by a noun, pronoun or adjective to show its relation to neighboring words.

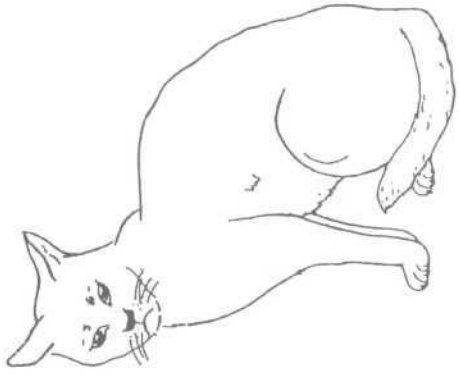
13. *Tenses*

A category used in the grammatical description of verb referring primarily to the way the grammar marks the time at which the action denoted by the verb took place. It contains three tense- present tense, past tense and future tense. E.g. she is going to brush, she is brushing, and she had brushed.

14. Participial Constructions

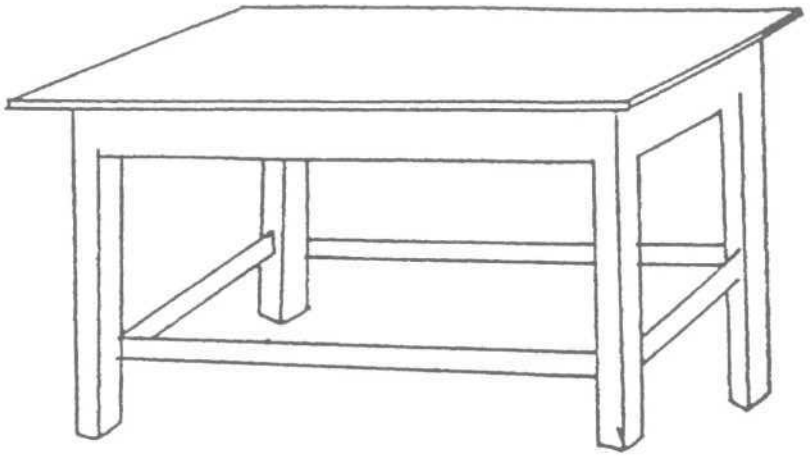
A traditional grammatical term used to refer to a word derived from a verb and used as an adjective as in an "A spilling milk".

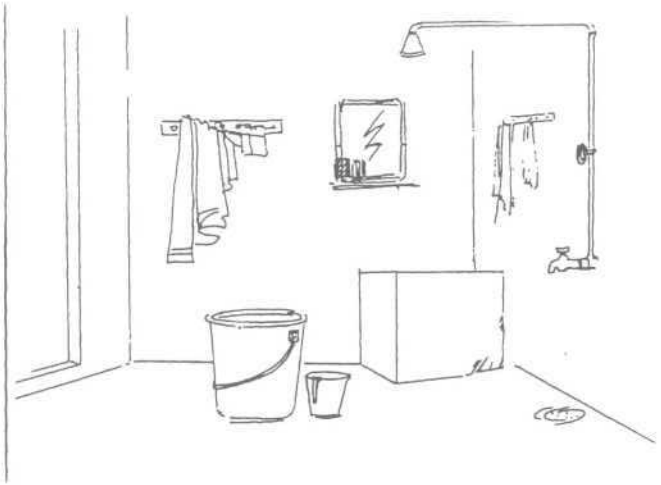
APPENDIX-C



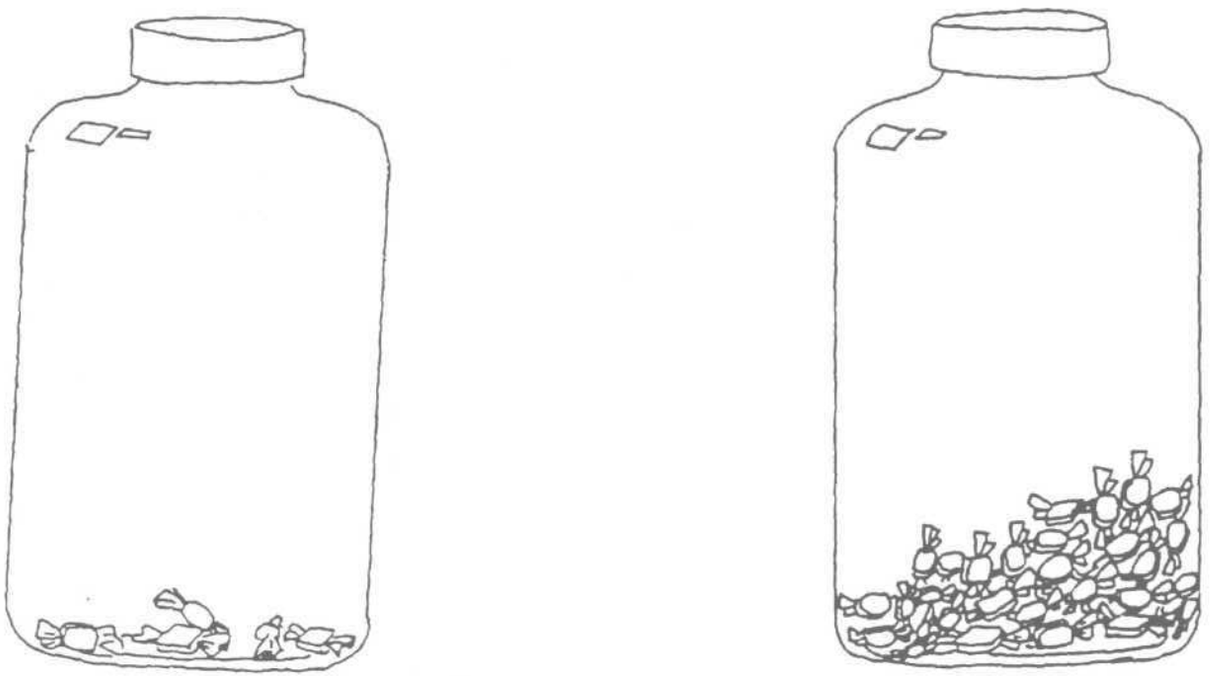
A-C1

HF - C1





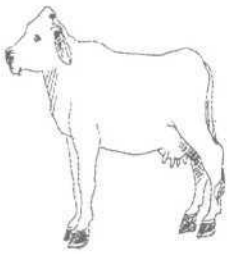
ANT - C_2

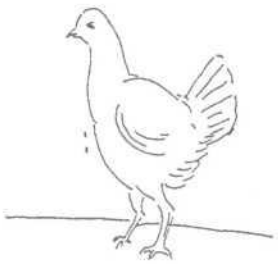


PQ-C1

SA - E1

sc





Appendix - D

S.No	CATEG*	RESPONSE	REMARKS
1.	A-C		
2.	A-C		
3.	A-E		
4.	A-E		
5.	VEG-C		
6.	VEG-C		
7.	VEG-E		
8.	VEG-E		
9.	F-C		
10.	F-C		
11.	F-E		
12.	F-E		
13.	BP-C		
14.	BP-C		
15.	BP-E		
16.	BP-E		
17.	D-C		
18.	D-C		
19.	D-E		
20.	D-E		
21.	V-C		
22.	V-C		
23.	V-E		
24.	V-E		
25.	HF-C		
26.	HF-C		
27.	HF-E		
28.	HF-E		
29.	U-C		
30.	U-C		
31.	U-E		
32.	U-E		
33.	P-C		
34.	P-C		
35.	P-E		
36.	P-E		
37.	CO-C		
38.	CO-C		
39.	CO-E		
40.	CO-E		
41.	FL-C		
42.	FL-C		
43.	FL-E		

44.	FL-E		
45.	B-C		
46.	B-C		
47.	B-E		
48.	B-E		
49.	I-C		
50.	I-C		
51.	I-E		
52.	I-E		
53.	ANT-C		
54.	ANT-C		
55.	ANT-E		
56.	ANT-E		
57.	PQ-C		
58.	PQ-C		
59.	PQ-E		
60.	PQ-E		
61.	SR-C		
62.	SR-C		
63.	SR-E		
64.	SR-E		
65.	PR-C		
66.	PR-C		
67.	PR-E		
68	PR-E		
69.	SS-C		
70.	SS-E		
71.	SA-C		
72.	SA-C		
73.	SA-E		
74.	SA-E		
75.	SC-C		
76.	SC-E		
77.	PL-C		
78.	PL-C		
79.	PL-E		
80.	PL-E		
81.	AN-C		
82.	AN-C		
83.	AN-E		
84.	AN-E		
85.	IN-C		
86.	IN-C		
87.	IN-E		
88.	IN-E		
89.	PNG-C		

90.	PNG-C		
91.	PNG-E		
92.	PNG-E		
93.	T-C		
94.	T-C		
95.	T-E		
96.	T-E		
97.	IT-C		
98.	IT-C		
99.	IT-E		
100.	IT-E		
101.	CAU-C		
102.	CAU-C		
103.	CAU-E		
104.	CAU-E		
105.	COND-C		
106.	COND-C		
107.	COND-E		
108.	COND-E		
109.	CONJ-C		
110.	CONJ-E		
111.l	COMP-C		
112.	COMP-C		
113.	COMP-E		
114.	COMP-E		
115.	Q-C		
116.	Q-E		
117.	CM-IN		
118.	CM-IN		
119.	CM-ON		
120	CM-ON		
121	CM-TO		
122.	CM-TO		
123.	CM-POS		
124.	CM-POS		
125.	CM-WI		
126.	CM-WI		
127.	CM-FR		
128.	CM-FR		
129.	CM-THR		
130.	CM-THR		
131.	CM-BY		
132.	CM-BY		
133.	TEN-C		
134.	TEN-C		
135.	TEN-E		

136.	TEN-E		
137.	PC-C		
138.	PC-C		
139.	PC-E		
140.	PC-E		

Abbreviations

* CATEG-Categories

C-Comprehension

E-Expression

A-Animals

VEG-Vegetables

F-Fruit

BP-Body Parts

D-Dress

V-Vehicles

HF- House and Furniture

U-Utensils

P-Person

CO-Color

FL-Flower

B-Bird

I-Insect

ANT-Antonym

PQ-Polar Questions

SR- Syntagmatic Relationship

PR- Paradigmatic Relationship

SS- Semantic Similarity

SA- Semantic Anomaly

SC- Semantic Contiguity

PL-Plurals

AN- Affirmative and Negatives

IN- Interrogatives

PNG- Person-Number-Gender

T- Transitive

IT- Intransitives

CAU- Causatives

COND-Conditionals

CONJ-Conjunctions

COMP- Comparatives

Q- Quotatives

CM- Case Markers

POS- Possessive

WI- With

FR- From

THR- Through

TEN-Tenses

PC- Participial Constructions

Appendix -E

Quick-CLiPS

Agewise break-up of items for short version of clips on the basis of item analysis.

3I	3II	4I	4II	5I	5II	6I	6II	7I	7II
A-C1	VEG-E1	A-C2	A-C2	VEG-C2	VEG-E1	VEG-E1	VEG-E1	F-E1	F-E1
VEG-E1	F-E2	VEG-E2	VEG-C2	VEG-E1	F-E1	F-E1	F-E1	D-E2	
F-E2	HF-C1	F-C1	VEG-E1	F-E1	F-E2	P-E1	P-E1	I-E1	
D-E2	U-E1	F-C2	VEG-E2	P-E1	U-E1	FL-E2	FL-C1	PQ-C1	
HF-E1	P-E2	F-E1	F-C1	FL-E2	P-E1	I-E1	FL-C2	SC-E	
U-E1	C-C1	F-E2	F-E2	B-E2	FL-C1	ANT-	FL-E2	CM-THR E	
U-E2	C-C2	BP-C1	BP-C1	ANT-E2	FL-C2	E2	SR-C1	TEN-E1	
P-E2	C-E1	BP-E1	BP-E1	PQ-C1	FL-E2	PR-E1	PR-E2	TEN-E2	
C-C1	C-E2	D-C1	D-C2	PQ-E2	I-C1	PR-E2	SC-E		
C-C2	FL-C1	D-E1	D-E1	SR-C1	I-E1	SC-C	PL-E1		
C-E2	FL-C2	V-C1	D-E2	PR-C2	SR-E1	PL-C2	PL-E2		
FL-C1	FL-E1	V-C2	U-C1	PR-E1	SR-E2	CAU-E1	TEN-E1		
FL-C2	B-C2	U-C1	HF-E1	SA-E1	PR-E1	COMP-E2	PC-E1		
FL-E1	B-E2	U-E2	U-C1	SA-E2	PR-E2	CM-THR E	PC-E2		
I-C2	I-C1	P-E1	U-C2	SC-E	SA-E2	TEN-E1			
ANT-E1	I-E2	C-E2	U-E1	PL-C2	PL-E1	TEN-E2			
PQ-C2	ANT-E2	C-E1	U-E2	PL-E1	PL-E2	PC-E2			
PQ-E1	PQ-C1	C-E2	C-C1	PL-E2	PNG-E2				
PQ-E2	PQ-C2	FL-C1	C-C2	TEN-C2	CAU-E1				
SR-C1	PQ-E2	FL-C2	C-E1	PC-C1	CONJ-C				
PR-C1	SR-C1	FL-E1	C-E2	PC-E1	COMP-E2				
PR-C2	SR-C2	FL-E2	FL-C1	PC-E2	CM-FR E				
PL-C1	SR-E1	B-C1	FL-C2		CM-THR C				
PL-C2	SR-E2	B-C2	FL-E1		CM-THR E				
AN-C1	SS-C	I-C1	FL-E2		TEN-E1				
AN-C2	SA-C1	ANT-C1	B-C2		PC-C1				
IN-E1	SA-E1	ANT-E1	I-C1						
PNG-C1	SA-E2	SR-C1	ANT-C2						
IT-C1	SC-C1	SR-C2	ANT-E1						
IT-E1	PL-C1	SR-E1	AN-C1						
IT-E2	PL-C2	SA-E2	AN-E2						
CAU-C1	AN-C1	SC-C	IT-E1						
CAU-C2	AN-E1	AN-C1	CAU-C1						
COND-C1	IN-E2	AN-E2	COND-C1						
COND-E2	PNG-E1	IN-C1	COND-C2						
COMP-E1	COND-E2	IT-E1	COND-E2						
COMP-E2	CONJ-C	CAU-C1	CONJ-E						
Q-E1	CONJ-E	COND-C1							
CM-TO C	COMP-E2	COND-C2							
CM-TO E	Q-E	COND-E1							
CM-POS E	CM-WI E	COND-E2							
CM-WI C	CM-FR C								
CM-FR C	CM-FR E								
CM-FR E	CM-BY E								
CM-THR C	TEN-C1								
CM-THR E	TEN-E1								
CM-BY E	PC-C1								
PC-C1	PC-C2								
	PC-E1								