Modified Receptive and Expressive Language Test (M-RELT) for children between three to seven years

Project under AIISH Research Fund (ARF)
(2013-2014)

Sanction no: SH/SLP/ ARF/ 4.65/ 2013-2014
Total grants: Rs. 4,00,000.00

Principal investigator

Dr. Dr. Deepa M. S.
Lecturer in Speech Pathology
Department of Speech Language Pathology

Co- Investigators

Dr. Shyamala K. C.
Professor of Language Pathology
Department of Speech Language Pathology

Ms. Deepthi. K. J.
Junior Research Fellow
Department of Speech Language Pathology

Abstract

Language development is an important milestone in every child. This development is influenced by factors such as age, gender, culture, health condition, family influences etc. Ages between three to seven years are important period where children develop language. This could be due to the stimulation children receive in places outside home environment including preschool, interaction with peer groups, improved observation abilities about the things around them etc. The language acquisition process may be hindered by deficits in sensory, motor, cognitive or other factors. This is well observed in children with hearing impairment, intellectual disability, cerebral palsy, autism, etc. This calls for attention to assess language in children. There are varieties of tests developed for this purpose. Many are diagnostic and time consuming. A routinely used screening tool is Receptive Expressive Language Test (RELT) which is easy to administer and less time consuming. There were certain drawbacks in this battery and hence the aim of the present study was to modify and re-standardize RELT based on the linguistic abilities of the children.

A total of 480 Kannada speaking typically developing children in the age range of 3.0 to 7.0 years of age were included in the study who were grouped into eight age groups. A total of 48 children with hearing impairment and intellectual disability were considered for clinical validation of the screening tool. There were three phases in the present study viz, pilot study, re-standardization and validation. During the pilot study 80 typically developing children were considered for developing a questionnaire which included list of skills according to the order of acquisition under receptive and expressive skills in the age range of three to seven years. The scale was re-standardized on 240 typically developing children where the developed questionnaire was administered to the children in the presence of their parents/ care takers. After re-standardization, the questionnaire was modified according to the information obtained from the children along with ratings done by three Speech Language Pathologists. This scale was administered on 160 typically developing children in the age range of three to seven years and 48 clinical population including children with hearing impairment and children with intellectual disability for validation.

The raw scores obtained under both receptive and expressive skills for all the age groups were subjected to quantitative analysis using Statistical Package for the Social Sciences (SPSS, 16.0 version) tool. Analysis with respect to age related trend in the receptive and expressive language skills, differences if any with respect to gender and interaction between age and gender was analyzed.

It was observed in the present study that as the age increased the complexity of the receptive and expressive skills increased. There was no difference in the performance of males and females across all the age groups. Comprehension skills preceded expression skills. Clinical population including children with intellectual disability and Hearing Impairment performed poorer as compared to typically developing children.

This scale helps in assessment of receptive and expressive language skills in children between the age ranges of three to seven years. It can be used in routine clinical settings for both diagnostic and therapeutic purposes. The scale was validated only on children with intellectual disability and Hearing Impairment and hence it can be extended to other clinical population such as Autism, Specific Language Impairment, Learning Disability, Slow learners etc.

.

CHAPTER I
INTRODUCTION

1.1 Language

Verbal communication is gift for human beings. People communicate their feelings and thoughts with the help of specific symbols which are common to those who belong to particular cultural or regional belt. These set of symbols are arbitrary in nature and is termed as language. Language is the systematic and conventional use of sounds (or signs or written symbols) for the purpose of communication or self-expression (Crystal, 1995). Language development is an important phase among the various milestones achieved by children. Children acquire language in a continuous and progressive nature. This process depends on the social, cultural and physical characteristics of the individual. Language has two different components such as comprehension and expression, which are the product of learning through experiences which starts from childhood. It is important to understand this acquisition of language in children and the use of the same.

1.2 Language acquisition

Language acquisition is a continuous which develops in domains comprehension and expression simultaneous and successively. Generally comprehension is achieved before expression for most of the learning processes. Further the linguistic processes are supported by intrinsic cognitive skills of the children. The human brain uses language as a representational tool to store information and to carry out many cognitive processes such as reasoning, hypothesizing, memorizing, planning and problem solving (Bickerton, 1995). Hence, language development is one of the most extraordinary capacities of the human species, and extremely rapid language acquisition by young children is one of the most remarkable aspects of early development (Turnbull & Justice, 2012). Children develop language at a remarkable rapid rate and each child apparently has a powerful array of learning procedures at his or her disposal (Hoff 2004). Initially infants start communicating by expressing through vocalizations and differential cries to satisfy their needs which can be meaningful/non-meaningful. As they grow, children start associating meaning with their utterances. Children start speaking in words by one year, combine words by two years and continue to express in sentences in later stages. Development of

language is understood in the form of its components such as phonology, morphology, syntax, semantics and pragmatics (Lahey, 1988).

Studies also suggest that most of the linguistic skills are developed in the first five years of life in children (Chomsky, 1971; Crystal, 1989). It is also evident that first five years of life are a critical period for language development. It also implies that there are periods of time in which the environment has particularly important impacts on language growth (Ann, 2002; Turnbull & Justice, 2012). They start attending preschool where are additional learning environment are created. Further the interaction with peer will be initiated.

The above information is the evidence for understanding the typical development of language in children. This typical development may be hampered by many conditions leading to delay in language development. These conditions are hearing impairment, mental retardation, cerebral palsy, autism, etc. The delay in language development will be understood by administering standardized tools. These tools are of many kinds including, scales, tests or a set of protocols. The further section will provide brief information about various tools used for language assessment in children.

1.3 Language tests

There are various test batteries available to assess the linguistic skills in children. There are two kinds of tests screening and diagnostics. Diagnostic tests provide detailed information about the linguistic skills in children and hence can be utilized in the clinical settings.

1.3.1 Diagnostic tests

For the assessment of language in children in the age range three to seven years, many diagnostic tests are available such as The Michigan Picture Language Inventory (MPLI) by Lera (1958), The Illinois Test of Psycholinguistic Abilities (ITPA) by Kirk, McCarthy and Kirk (1961), Peabody Picture Vocabulary Test (PPVT) by Dunn (1965), Test of Auditory Comprehension of Language (TACL) by Carrow (1968) and revised (1973), Carrow Elicited Language Inventory (CELI) by Carrow (1974), Test of Syntactic Abilities (TSA) by Quigley, Steinkamp, Power and Jomen (1978) , Test for Reception of Grammar (TROG) Bishop (1989), Comprehensive Language Assessment Tool for children (CLAT-C), Navitha and Shyamala. (2009), Cognitive Linguistic Assessment protocol (CLAP) by Anuroopa and Shyamala (2006),

Kannada Language Test (KLT) by Shyamala, Jayaram & Vijayashree (2004) etc which are time consuming though detailed. Very limited screening tools are available for the assessment of language in children in the age range three to seven years.

But the diagnostic tests are subjected to time consuming since it is meant for detailed diagnostic evaluation. Therefore screening scales are routinely used in assessing linguistic skills of the children. The rating scale for language assessment will be able to evaluate language with respect to two domains viz comprehension, and expression.

1.3.2 Screening tests

The scales used for screening include Receptive Expressive Emergent Language Scales (REELS given by Bzoch& League, 1971), Receptive Expressive Language Test (RELT, Department of Speech-Language Pathology, All India Institute of Speech and Hearing, 1983), and 3-Dimentional Language Acquisition Test (3DLAT, given by Harlekar (1986). A well known diagnostic test used in the evaluation of language in children between the age ranges of 3 to 7 years is Kannada Language Test (KLT, Shyamala, Jayaram & Vijayashree, 2004).

1.4 Need for the study

There are a handful of tests and scales which assess the language skills of children in India who speak various languages. There are fewer tests and scales which are available for the assessment of language in children whose native language is Kannada.

The scales and tests which are clinically used to assess language in children have been developed three to four decades ago. Children in the present days are comparatively faster at acquiring various skills which can be accounted for increase in the amount of stimulation, physiological and psychological maturational aspects of children, environmental factors etc. These factors differentiate the children in present days from that of older generation. Hence the tests/ scales developed earlier may not be suitable to measure the language skills accurately. RELT is a scale which is often used to assess the language of children between the ages of 3 to 7 years. This routinely used test has certain drawbacks which are listed in the further sections.

Many of the skills assessed under receptive and expressive domains can be observed in much younger children of present generation. E.g., R (Receptive domain) 68 (36-42 months):

comprehends ‘No’ used to indicate non-existence, R 71(42-48 months): points out animals, objects, food from a large group of other pictures, R 74 (42-48 months): comprehends demonstrative nouns this, that there. E (Expressive domain) 76 (48-54 months): uses below, inside, on top, out, what, where, who, why, whose, how and no. E 83 (54- 60 months): uses irregular verbs ‘went’, ‘caught’. E 86 (54-60 months): uses numbers up to 3 and can write all the letters of the alphabets.

There is a mismatch between the skills assessed under receptive and expressive domains. That is certain skills are assessed under expressive domain at a younger age and the same skills are assessed under receptive domain at the later age. E.g., E 67 (36-42 months) identifies five primary colours and names. R 72 (42-48 months) recognizes time and pictures and all major colours. E 68 (36-42 months) uses can’t, don’t, in, on and plural marker “s”. R 89 (62-66 months) distinguishes between can and cannot.

Two or more skills are assessed in a single statement. E.g., R 72 (42-48 months) recognizes time and pictures and all major colours. E 76 (48-54 months): used below, inside, on top, out, what, where, who, why, whose, how and no (prepositions and ‘wh’ questions. E 91 (62-66 months) uses all ‘wh’ questions, yes questions, writing.

Repetition of certain skills present across the age groups. E.g., E 76 (48-54 months): uses below, inside, on top, out, what, where, who, why, whose, how and no (prepositions and ‘wh’ questions. E 84 (54-60 months) uses all ‘wh’ questions, E 91 (62-66 months) uses all ‘wh’ questions, yes questions, writing. Certain skills assessed are not described but only named. E.g., R 91 (60-66 months) reading. E 91 (60-66 months) uses all ‘wh’ questions, yes questions, writing.

Thus it can be noted that RELT has drawbacks such as presence of “wh” questions more than once, enquiring regarding reading and writing skills which itself is a entirely different domain to be assessed, mismatch of receptive and expressive language skills listed, to name a few. Thus the aim of the present study was to modify and re-standardize the Receptive Expressive Language Test for Kannada speaking children in the age range of 3-7 years. This scale can later be used as a quintessential, inexpensive language development scale which is easy to administer and accurate in identifying whether the child being assessed has a language delay or not. This

scale is intended to depend on developmental information derived from interviews and on direct observations made by the evaluator along with a norm reference to aid in assessment.

1.5 Objectives of the study

- To modify Receptive Expressive Language Test for children between the age ranges of 3 to 7 years.
- To re-standardize the modified Receptive Expressive Language Test for children between the age ranges of 3 to 7 years.

CHAPTER II

REVIEW OF LITERATURE

Language is derived from the Latin word *lingua*, for tongue. Language is an essential component of communication that differentiates humans from other primates. Language is a system used by the people in a shared culture to exchange the thoughts and feelings through arbitrary signals, such as voice sounds, gestures, or written symbols to communicate with one another. Language is evolved as a social tool which involves a set of arbitrary verbal symbols that are arranged in a conventional code to communicate ideas with one another and influence their behavior (McLaughlin, 1981). The child who learns a language achieves the ability to recognize and produce a set of sounds and learn how these sounds can and cannot be combined into possible words (Crystal, 1995). Language is a spectrum of different components which derive the understanding and expression of an individual. It has various components.

2.1. Language and its components

Language includes three interrelated domains: form, content and use (Lahey, 1988). *Form* refers to how the sounds, words and sentences are arranged and organized to convey the information, *Content* refers to the meaning of the language and *use* refers to how people convey the information using language. Thus form, content and use comprise a three-domain system of human behavior that organize and represents major dimensions of language. Language includes five components: phonology, morphology, syntax, semantics and pragmatics. Form includes phonology, morphology and syntax whereas content and use refers to semantics and pragmatics respectively. *Phonology* refers to rules governing the sounds that are used in forming syllables, words, phrases and sentences. *Morphology* refers to studying morphemes, smallest unit of language that carries meaning. *Syntax* refers to structure of a sentence i.e arrangement of words which provides meaningful relationship between words in a sentence. *Semantics* refers to meaning of words and how they relate to each other and *Pragmatics* refers to use of language for communication purposes. Language development of the children involves achieving competency in each of these domains. Language acquisition is the process that supports ability of the children to comprehend, express and communicate and it does not develop in isolation but is supported by motor, cognitive and social domains.

Language is a communication tool where infants start to learn language before they are even born and they are able to perceive sounds and feel sensations before birth Payne (2013). Parents play an important role in facilitating the early communication development in children. Newborn are able to perceive and recognize their mother's voice along with their own cry. Infants are able to discriminate and categorize specific speech sounds referred as *categorical perception*, the ability to categorize based on the perceptual and conceptual features (Mehler, Bertoncini, Barriere, 1978). Additionally, the motor, cognitive and social development support language development.

2.2. Development of Language

Language acquisition occurs in different stages in human life. Different models, theories and studies on language acquisition are proposed by several researchers (Skinner, 1957; Piaget, 1971 Bruner, 1983; Tomasello, 2003). It is necessary to understand typical development of language in different stages as it helps in comparing with the clinical characteristics of language. Knowledge about language acquisition further helps in further assessment and therapeutic management.

2.2.1 Theories of language acquisition

There are six theories of language acquisition and intervention which includebiological maturation theory, linguistic rule induction, behaviorism, information processing, cognitivism, and social interactionism.

The biological maturation theory relates to the observations of universality of language acquisition. According to this theory, some macrostructures of the brain are critical than others for language learning and microstructures factors such as cell organization, myelination of axons and axondendritic synapses play role in language learning. Additionally both genetic and environmental factors influence language development. Rapidity and at young age acquire language with the help of innate mechanisms is supported by nativists which is contrasted by empiricist who state that there is an influence of environment on language acquisition (Cairns, 1996).

Linguistic rule induction theory states that Language develops because of an innate language acquisition device (LAD). LAD is a biological system which needs to be triggered from environment. biological maturation theory and linguistic rule induction theory are not two different theories- alternate sides of the same coin. Chomsky (1981) gave the concept of an innate universal grammar (UG) which is compatible with all existing and possible grammars of the world. A biologically based, innate module for picking up language needs only to be triggered by verbal input from environment which is termed as *universal grammar (UG) and it is within* LAD. It's a part of the LAD that contains all the basic rules of grammar that underlies all human languages. Similar patterns of development across many languages, e.g., subject-object word order (e.g.,Slobin, 1982). Further there is a critical period for language development. Deprivation of language in early years results in impaired language development (Johnson & Newport, 1989).

Behaviorism emphasizes that language acquisition can be explained by focusing on the observable and measurable aspects of language behavior. Language acquisition is related to observable environmental events (stimuli) that co-occur with specific verbal behavior (response). Language as a skill does not differ essentially from any other behavior. Focus in the process of acquisition is not just on word or sentences but on functional units. Language acquisition should not rely on intensions or implicit knowledge of grammatical rules. Staats (1971) stated that

language is not innate and its linguistic aspects are not universal. He concluded saying that the linguistic aspects are influenced by the environment around the child. Conditioning plays an important role in language learning as there is a stimulus-response (S-R) mechanism similar to adults that influence the child (Skinner, 1957; Chomsky, 1957; Staats, 1971).

According to information processing theory the role of internal information processing mechanism is present in language acquisition and use. It has both an old and a new version. Former explains that a set of serial information processes act on incoming perceptual input from auditory, visual sources and then analyze it, comprehend it, formulate a response and transform back to physical form. Latter talks about the parallel distributed model (PDP) or connectionist model. Accordingly the memory stores the encoded stimuli after processing the information and helps in retrieval of information also. Language acquisition depends on the empiricists principle that the environment cause changes within the processing mechanisms. Based on connectionist model, it has been assumed that all original connections are equal through experience when some connections become strengthened by activation while others may be weakened due to lack of empirical evidences (Johnson-Laird, 1983; Carrow-Woolfol, 1988).

Cognitivism theory assumes that language is not innate in or of itself, but cognitive precursors are. Language is neither innate nor learned but emerges as a result of the child's constructivist activity. Language symbolizes the ability to represent and manipulate mental concepts about the world which results from cognitive maturation. A child's cognitive capacities differ qualitatively as well as quantitatively from those of adults. The conditions for learning language are the same conditions that are necessary for any kind of learning. The environment provides the material that the child can work on. Cognitivists view the role of feedback in the learning process as it is important for affective reasons, but non-influential in terms of modifying or altering the sequence of development (Piaget, 1896; 1926, 1952).

Finally the social interactionism theory emphasizes on the communicative purpose over language and the context. The rule of social communication differs from that of linguistic structure. According to this theory language develops not because of any innate linguistic competence/ strict reinforcement but because of human beings are motivated to interact socially and to develop concept of self and others. The important elements of development are not linguistic, cognitive/ verbal behavior but phenomena of intentional and symbolic acts of speech, conversation functions etc. Language acquisition occurs because child has a motivational drive to develop concept of self and others. Parents/ communication partner contribute significantly- modify linguistic input- supply scaffold for the development of language (Bruner, 1974; Cuda & Nelson, 1976; Snow, 1977; Snow & Ferguson, 1977; Cazden, 1988).

2.2.2 Models of language development

Macwhinney (1987) introduced competition model in which children acquire their native language components (phonological, morphological, semantic, and syntactic) through specific

mechanisms. During early development, children first learn the language concepts which are heard frequently and then learn the language concepts that are heard rarely in the later life. Competition model works on a phenomenon called overgeneralization.

Bloom (2000) proposed intentionality model that states that children's' language is influenced by the environment and the peer group. According to this theory, children must be intentional to acquire language which in turn improves the linguistic constructions and express their ideas. Children express themselves when the mental status of the child differs from the communication partner.

Connectionists models of language emphasized on inner mechanism of brain. Cognitive process in the area of language focuses on language organizations across the brain and describes how the connections are interlinked in storing the words within the lexicon.

All these models and theories attempt to explain how the language is acquired in children in different ways which involved many factors such as role of environment, input from care taker and peer group, play behaviour, social interaction, ability of the child, cognitive development and brain infrastructure mechanism. Thus language is interplay of cognitive, social, motoric, intentional and environmental aspects. It is also interesting to study how language is achieved/ acquired in a hierarchical manner.

2.2.3. Stages of Language Development.

2.2.3.1 Language development in infants

Development of language begins with the prelinguistic stage followed by true language development. This development of language concepts are attained in specific period, referred as *developmental milestones*. For better understanding, the language development are categorized into various stages.

During the initial period of six months of infant's life is the perlocutionary stage where caregivers play an important role in interpreting behavior of infants. The second half of infancy is called illocutionary stage where infants develop intensions of communication expressed through gestures and vocalizations. During this stage, meaning is attached to the symbols by children. Some infants may be able to comprehend around 20 words around 8 months (Fagan, 2009). The period after one year of age is considered as the locutionary stage which refers to production of words and propositions by the speaker (Austin, 1962). This stage begins with the first meaningful word. The intentions are expressed in the form of words with or without gestures. First word serves as the beginning step for the transition of language from preverbal to verbal communication.

Pre-Linguistic stage:

The prelinguistic period is refereed as practicing period for learning sounds prior to the true meaningful speech. Traditionally prelinguistic stage includes five developmental milestones.

Crying/vegetative sounds (0-1months) are the initial sounds of the infants include cries, vegetative sounds and sounds of pleasure. Reflexive cry is the first milestone of infants followed by vegetative sounds which includes clicks, burps, coughs etc. later vegetative sounds are followed by sigh like sounds which are vowel like, hence referred as quasi-resonant nuclei. Cooing (1-4months) is the milestone seen during face-to-face interaction with the caregivers. This includes production of speech sounds that has more vowel like feature. Such types of speech sounds are produced to express pleasure.

Marginal babbling (4-6months) is the period which shows the significant developments of vocalizations are observed. Infants produce syllabic sounds which include combination of consonants with vowels (CV and VC) and are fully resonant nuclei. Vocal play (6-8months) includes reduplicated babbling which refers to duplication, seen in strings of repeated syllables and non-reduplicated babbling which refers to variations in the same strings. Infants produce multisyllabic speech sounds during this period.

Echolalia (8-12months) is the imitate speech produced by the caregivers during this period. Though the imitation is not meaningful the intonation, structure and sequence of the phonemes are accurate as observed. Jargon speech (9-12months) is the stage which overlaps with the period of true language development. Sounds are produced with specific intonation pattern and stress that resembles adult like speech.

Early vocalizations are classified based on the sequential patterns. Nathani, Ertmer and Stark (2006) proposed a stage model called Stark Assessment of Early Vocal Development – Revised (SAEVD-R) which can be used to classify vocalizations and also assess the oral communication abilities of the infants. SAEVD-R includes 23 types of vocalizations divided into five levels of development. Table 1 outlines the language development according to SAEVD-R.

Table 1

Levels of development in infants included in SAEVD-R

Sl.no	**Stages**	**Age (in months)**	**Language development**
1	Reflexive	0-2	Crying, fussing Vegetative sounds (burps, cough and sneeze)
2	Control of phonation	1-4	Cooing and going Clicks, trills

			Vowels combine with consonant
3	Expansion	3-8	Control over articulators Adult like vowels and vowel glides Marginal babbling Varied loudness and pitch of their voice
4	Basic canonical babbling	5-10	Produce consonant-vowel(CV) Canonical babbling Reduplicated and nonreduplicated babbling
5	Advanced forms	9-18	Combination of two vowels (dipthongs) Complex syllable forms Jargon speech

2.2.3.2 Language Development in Toddlers:

During second year, children's vocabulary (lexicon) increases. They learn to combine these words and form small phrases to communicate. Graham and Kilberth (2007) stated that children are able to use gestures along with words around 14 months and children around 22 months rely on speech rather than gestures. Words such as no (negations), mine (possession) emerges during second year of life. According to studies it is found that nouns appear first compared to other grammatical classes (Nelson, 1973). At 18 months vocabulary of toddlers will continue to grow around 50 words along with combining words into two words phrases. In the two-word stage, toddlers are able to express functions such as requesting, commenting, questioning and negating.

It is documented that true development of syntax begins in the toddler stage where the children follow certain rules of language. Brown (1973) gave five stages of language development based on the syntactic complexity achieved by the children as shown in Table 2. Morphemes on the other hand begin to appear around 18-24 months. Toddlers begin to comprehend the verbal morphemes around 20-24 months of age. Development of morphology at different ages in children has been documented by Brown (1973) as shown in Table 3.

Table 2*: Stages of Language Development by Brown (1973)*

Brown's stage	**Age**	**MLU**	**Major achievements**
I	18	1.31	o Single-word utterances (Nouns and uninflected verbs)
II	24	1.92	o Two-element sentences (True clauses)
III	30	2.54	o Three-element sentences (independent clauses emerge)

IV	36	3.16	o Four-element sentences (independent clauses continue)
V	42	3.78	o Recursive elements emerge (Connective devices such as and, because etc)
POST-V	54	5.02	o Complex syntactic patterns appear o Subordinate and coordination o Complement clauses

Table 3: *Grammatical morphemes acquired in early childhood by Brown (1973)*

Grammatical morpheme	**Age (In months)**
Present progressive –ing	19-28
Plural –s	27-30
Preposition –in	27-30
Preposition –on	31-34
Possessive ‘s	31-34
Regular past tense –ed	43-46
Irregular past tense	43-46
Regular third person singular –s	43-46
Articles a, the, an	43-46
Contractible copula be	43-46
Contractile auxiliary	47-50
Uncontractible copula be	47-50
Uncontractible auxiliary	47-50
Irregular third person	47-50

Villiers and Villiers (1973) conducted a study on 21 children and compared the results with Brown’s study by using the 14 grammatical functions and coding rules given by him. The results including the development of grammatical words given by Villiers and Villiers (1973) are shown in the Table 4.

Table 4*: Grammatical morphemes acquired in early childhood by Villers and Villers (1973)*

RANK	**STAGE**	**MONTHS**	**MORPHEMES**
1	II	27-30	Present progressive (-ing)
2	II	27-30	Preposition in
3	II	27-30	Preposition on
4	II	27-30	Plural (-s)
5	II	27-30	Past irregular (ate)
6	III	31-34	Possessive (-‘s)

7	III	31-34	Uncontractible copula (is, am, are)
8	II-V	31-46	Articles (a, the)
9	V	41-46	Past regular (-ed)
10	V	41-46	Third person singular (-s)
11	V	41-46	Third person irregular
12	V	41-46	Uncontractible auxiliary (is, am, are)
13	V	41-46	Contractible copula
14	V	41-46	Contractible auxiliary

A list of language skills developed in the age range of 1-2 years has been documented based on the studies conducted by the researchers and is represented in Table 5.

Table 5: *Development of linguistic skills in the age range 1-2 years*

Age (in months)	**Syntax and morphology**	**Semantics**	**Pragmatics**
12	Single nouns	First word	Referential gestures
16	Negation Single nouns MLU- 1.31	Uses 3-20 words	Uses Verbal turn taking
20	Grammatical morphemes (ing) MLU-1.62	Uses 50 words which includes verbs and adjectives	Uses word-gesture combinations
24	2 word combinations Preposition (in,on) Possessive morphemes Irregular past tense verbs MLU-1.92	Comprehends around 500 words Expresses around 200 words.	Uses imaginative , heuristic and informative language functions

MLU- Mean Length of Utterance

(Sources: Brown, 1973; Halliday, 1978; Rescorla, 1980p; Gard, Gilman and Gorman, 1993; Badwin and Biard, 1999; Fernald, Swingly and Pinto, 2001; Fisher, 2002;Volterra, Caselli, Capirci, & Pizutto, 2005).

2.2.3.3 Language Development in Preschoolers.

Preschoolers develop linguistic skills along with the development of motor, cognitive and social skills. Children during this period interact and explore their surroundings resulting in expansion of their language comprehensive and expressive skills. In this period children also acquire literacy skills which assist them in comprehending and using the written language. They

learn faster across all dimensions of language and manage longer conversations with adults having greater language abilities and knowledge. Vocabulary is said to expand till 900-1000 words at around three years and till 2100-2200 words at the age of five years (Owens, 1996).

Leonard, Miller and Gerber (1999) reported that children develop spontaneous use of novel words by 3.5 years. By 3.6 years of age, children will be able to interpret transitive sentences using word order as the syntactic cue.

Once children are able to express two word utterances, three to four word sentences also starts emerging around two years of age. Such sentences represent hierarchical sentence structure which includes expansions and recombination (Brown, 1973). Children combine the individual words into larger meaningful units such as phrases, clauses and then sentences.

Children start communicating by using nouns which are further expanded and altered in more flexible and specific ways. By 3 years of age, preschoolers start using prepositions, pronouns, auxiliary verbs and articles. Pronouns develop slowly and variably in children where the personal pronouns are acquired first followed by subjective (I, you, he, she, they), objective nouns (me, him, her, them) and possessive pronouns (his, her, theirs) which are mastered later. By 5 years of age, most of the pronouns are mastered with the exception of reflexive pronouns. Owens (1996) studied acquisition of pronouns in children and listed the same accordingly to the chronological age. The same is outlined in Table 6.

Table 6*: List of acquisition of pronouns by Owens (1996)*

Approximate age	**Pronouns**
17 – 26 months	I, it
27 – 36 months	My, me, mine, you
31 – 34 months	You, she, he, yours, we
35 – 40 months	They, us, hers, them, her
41 – 46 months	Its, our, him, myself, yourself, ours, their, theirs
47+ months	Herself, himself, itself, ourselves, yourselves, themselves.

By 24-36 months, inflectional morphemes such as past tense markers, present progressive marker, possessive markers and plurals emerges and by age four, syntax appears adult form (Gopnik, 1997). By adding inflectional suffixes to the adjectives, preschoolers develop the ability to express the degrees which helps in the daily social interactions. Children start understanding and expressing the comparative and superlative inflectional suffixes between three to five years of age. According to studies, superlative degree appears by four years of age followed by comparative degree by five years of age. By five years of age, the expression of derivational suffix "–er" is mastered (McLaughlin, 1998)

Wells (1985) revealed that most of the forms in the English verb system are mastered by five years of age. The stages of language development by Brown (1973) suggested that most of the grammatical aspects are mastered by five years of age. By four to five years of age, preschoolers are able to identify the basic colours and name them but the subtle differences are acquired later. Children acquire *spatial words* (in, inside, on and under) referred as the location of the referent during the preschool period and masters by four years of age (Clark, 1980). *Deitic terms*, words which are used and interpreted depending on the location of the speaker and the listener are mastered by the time they enter school as they require advanced pragmatic and cognitive abilities (Clark & Sengul, 1978). By five years of age, most of the spatial relations are mastered (Cox & Richardson, 1985). Similarly, children comprehend temporal words such as *here* and *now* initially followed by *after* and *before*. Temporal words such as *since, until, while* and at *the same time* are mastered by five years of age.

Children rearrange the words and produce longer meaningful utterances to express their feelings such as declaration, questioning and disagreement. Preschoolers express variety of sentence forms such as negative sentences which are acquired first followed by interrogative and imperative sentences. Preschoolers understand *what* and *where* questions first followed by *who* and *what-do* questions where as questions with *why, how* and *when* are acquired later (cited in McLaughlin, 1998). Preschoolers are able to recognize the differences between sentences referring to objects in a specific way and sentences referring to objects in a generic way (Gelman & Raman, 2007). Active sentences are the most basic and common sentence in English which are acquired earlier than the passive sentences which has the positional changes of nouns in the same sentence. James (1990) suggested that passive sentences are not consistently interpreted till the child reaches at least 5 years of age.

The basic form of stories develops after two years in children and frequently around 3.6 years of age in preschoolers. Most of the stories that preschoolers express will be the recent events which had a stronger influence on them. Such earliest stories are referred as "protonarratives" (Miller & Sperry, 1988) or as "prenarratives" (Westby, 1990). Here the children express the stories by chaining the elements of it which is referred as sequencing. Similarly primitive narratives also have a theme that includes overall organization. The elements in sequencing are chained to each other perceptually where as in primitive narratives the elements are related in a conceptual manner. Preschoolers express primitive narratives without understanding the cause-effect relationship (Westby, 1990). Labov (1972) defines narratives as "*minimally containing two sequential independent clauses about the same past event*". Narratives play an important role for multiple language achievements which include all components of language where syntax is used to arrange the ideas and words, semantics to represent the events, objects and persons, morphology to signal the time of events, phonology to pronounce syllables and words clearly with appropriate intonation and pragmatics to share the information with the communication partner. Even though the narrative skills appear in children around 2 years, includes minimal description and masters only during the school age. A list of

language skills developed in the age of 2-5 years has been documented by considering several studies conducted by the researchers as shown in Table 7 & 8. These are few studies which outlined the linguistic development in children.

Table 7*: Development of linguistic skills in the age range of 2-3 years*

Age (in months)	Syntax and morphology	Semantics	Pragmatics
28	Uses present progressive morphemes – ing with a mastery	o Overgenaralize of new words o Attends sentence structure in interpreting new words	Topic initiation and topic change Short dialogues
32-36	More contractions 25% of all utterances consist of single nouns and 25% consist of single verbs MLU-2.85-3.16	o Comprehension- 900 words o Expression – 500 words o Expresses simple questions	Clarification of conversation

Note: MLU: Mean Length of Utterance

(*Sources: Brown, 1973; Halliday, 1978; Rescorla, 1980p; Weiss, Gordan & Lillywhite, 1987; Gard, Gilman and Gorman, 1993; Capirci, Iverson, Pizzuto, & Volterra, 1996; Badwin and Biard, 1999; Fernald, Swingly and Pinto, 2001; Fisher, 2002;Volterra, Caselli, Capirci, Pizutto, 2005)*

Table 8*: Development of linguistic skills in the age range of 3-5 years*

Age (In months)	Syntax and morphology	Semantics	Pragmatics
36	Expresses 4-5 words in sentences Compound sentences (with, and)	Expresses pronouns (they, them,us) Learn new words through fast mapping	Engages in longer conversation
40	Expresses pronouns consistently, adverbs of time	Expresses 1000-1500 words Comprehends 1500-2000 words	Expresses primitive narratives Makes

		Comprehends few relational words such as hard-soft	conversational repairs
44	Expresses Articles, Past tense, Contraction consistently	Comprehends kinship terms Narrows the meaning of words using syntactic information	Comprehends indirect requests along with nonverbal pointing
48	Expresses in 4-7 words in a sentence Irregular third person verbs Contractible and uncontractible auxiliaries	Overextension of new words Expresses reflexive pronouns (himself,herself,itself)	Expresses narratives, interpretive, logical, organizing and participating functions
52	Expresses subordination and coordination in sentences, Irregular plural forms	Expresses what do, what does and what did questions	Expresses indirect questions
56 **60**	Expresses 5-8 words in a sentence	Expresses 1,500-2000 words Comprehends 2500-2800 words Expresses deitic terms (this, that,here,there)	Expresses true narratives without character/theme

(Sources: Brown, 1973; Halliday, 1978; Rescorla, 1980p; Weiss, Gordan & Lillywhite, 1987; Gard, Gilman and Gorman, 1993; Capirci, Iverson, Pizzuto, & Volterra, 1996; Fernald, Swingly and Pinto, 2001; Fisher, 2002; Volterra, Caselli, Capirci, Pizutto, 2005)

A list of skills which include motor, cognitive, linguistic and social skills achieved during this period at a particular age has been given under different domains (Lane & Molyneaux, 1992; Shulman, 1994; Nicolosi et. al., 1996; Owens, 1996). Among them the list of linguistic skills are as following:

- Follows simple verbal commands – 24 months
- Name familiar pictures and point to them – 27 months
- Matches familiar objects – 30 months
- Recognizes simple actions in the pictures – 33 months
- Matches primary colors – 39 months
- Gives two objects on request – 36 months
- Gives full name on request – 42 months
- Enjoys ‘make believe’ plays – 45 months
- Categorization of the objects – 48 months

- Comprehends few concepts like today /tomorrow /yesterday and morning/afternoon/night – 5 years

2.2.3.4 Language development in School years.

Most of the grammatical aspects that are to be mastered in school years are the extensions of skills appeared during preschool period (Wallach, 1984). Preschoolers apply literal translations to language whereas the school children express by integrating their feelings and experiences into their overall understanding and usage of the language. The development of grammatical aspects appear during school years includes a variety of language structure such as understanding and expressing wh-questions, passive sentences, compound and complex sentences and morphological aspects related to verbs and nouns. The wh-questions such as *when, why* and *how* emerges in older preschoolers and younger students. Wallach (1984) revealed that wh-questions which are acquired later become consistent around 8 years of age. Verbal reasoning evolves during school years where the children understand and express complex sentences including subordinate, relative clauses and compound sentences.

By the end of preschools years, children are able to express truncated passive sentences which are based on verb particles, adjectives and verb endings (‘ed’, ‘ing’). After 5 years of age, children gradually learn to interpret and express passive sentences in a better and improved way (Mclaughlin, 1998).

Researchers have reported that by first grade, vocabulary of the children is approximately 20,000 words. Preschoolers accumulate the semantic features for the new words whereas the school children recognize additional features associated with each word. Children’s association of words are referred as shift from thematic to taxonomic organization of responses (Locke, 1993). *Thematic organization* refers to relating word to an integrated context in which they are experienced as a whole. *Taxonomic organization* refers to classification in which items share features that define them as a class (Locke, 1993). By interacting with the caregivers, children begin to discriminate the objects based on the semantic features and categorize them into more specific groups called *subordinate categories* under the broader and more conceptual groups called *superordinate categories*. Children associate words thematically during preschool age and beginning of the school age but they start organizing words taxonomically based on superordinate and subordinate classifications in the later school years.

Before entering the school, preschoolers go through a period of rapid development of grammatical aspects, mastering several syntactic and morphological structures. One shift among them is the *syntagmatic-paradigmatic shift*. It is observed that older preschools have syntactic basis in their word associations which is referred as *syntagmatic association*. After entering the school, their word associations become semantically based which is referred as *paradigmatic association*. This shift appears to develop rapidly in first few grades of school years and continue into adulthood (Cited in Mclaughlin, 1998). Preschoolers learn new words by developing first

associations for it called as *fast mapping* where children add information and refine the total meaning of the word in a prolonged and continuous process by their experiences. A web of words and related concepts develop around the original word referred as *semantic network* (Pease & Gleason, 1985). These interconnections contribute to two other related abilities that describe the organizations in the vocabulary during school years, *divergent* and *convergent semantic production* (Guilford & Hoepfner, 1971). *Divergent semantic production* refers to expression of variety of related words, information and concepts where as *convergent production* refers to production of a specific word which is prompted by other words that are semantically related.

Morphological development of the school going children is closely related to their syntactic development. Morphological development includes using derivational prefix that are added in the beginning of the word and derivational suffix that are added at the end of the word. Morphological skills are associated with other linguistic and literacy skills such as word-level reading, receptive and expressive vocabulary and spellings (Apel & Masterson, 2001b; Apel & Thomas-Tate, 2009).

Most of the complex syntactic skills are achieved during school years. Complex syntax refers to advances grammar structures which include skills like complex verb phrases using perfective aspects, construction of passive sentences and noun-phrase postmodification with past participles. Children's acquisition of complex syntactic structures is related to the complexity of their caregivers' syntax (Vasilyeva, Waterfall & Huttenlocher, 2008).

2.2.3.5 Development of Metalinguistic Skills

During school years, children acquire metalinguistic competence which is the ability to think about the language and analyze it. Children's metalinguistic skills improve dramatically during school years because most of the activities during this period draw on language analysis. Children do not exhibit clear metalinguistic skills until 6 -7 years of age. Few precursors to metalinguistic skills appear during toddler and preschool period where the children correct words, make or substitute words, reject difficult words and modify their language based on the listener (older, younger and peer group). One of the metalinguistic skill, *word awareness* develops in early school years. *Word awareness* refers to understanding that words have multiple meanings and its referent have multiple names. However preschoolers believe that words have inflexible and specific meanings restricted to physical features of the objects and their experience with such objects. Children in the school age learn that words are flexible in their meanings and change according to context and situations. Different words can have same meaning and same word can have different meaning. Similarly different sentences can have same meaning and same sentences can convey different meanings. Such concepts are referred as *ambiguity* which emerges in the school age (cited in McLaughlin, 1998).

Figurative language is a type of language where individuals use language in nonliteral and abstract ways. It is one of the metalinguistic skill as children's language acts as an arbitrary code (Westby, 1998). It includes utterances that convey meaning by connecting two contexts that share relations or features. Figurative language includes verbal behaviours such as similes, metaphors, idioms, hyperboles, proverbs and irony which are expressed to convey the mental images in the minds of listeners or to emphasize something in an interesting and different way.

Metaphor conveys similarities between two objects or ideas stating that both are same. It appears in preschoolers and improves gradually throughout school age years and continues till adulthood. Metaphors include three categories based on the complexity such as basic-level category, super-ordinate and sub-ordinate metaphors. Researchers reported that children understand simple basic-level metaphors prior to subordinate-level metaphors as they need a strong grasp of specific concepts of words in subordinate level. (Turnbull & Justice, 2011)

Idioms are the expressions that include both literal and figurative meaning. Gibbs (1987) suggested that there are two types of idioms such as opaque idioms that demonstrate minimum relationship between literal and figurative interpretation and transparent idioms which is an extension of it. This study showed that children around 5, 6, 8 and 9 years of age are able to explain transparent idioms more accurately than opaque idioms. Comprehension of idioms improves in school age years and continues till adulthood.

Irony and *sarcasm* refers to speaker's intentions that are different from literal meaning of the word used. Glenwright and Pexmen (2010) stated that irony refers to unmet expectations that are not the fault of the individual and sarcasm refers to failure of specific individual to meet any expectation. Their study reported that although 5-6 years old children are not able to distinguish between intentions of the speaker when sarcasm is used contrasting irony whereas 9-10 years children were able to distinguish them. Proverbs are the statements that are used to express beliefs, conventional values and wisdom of the society (Nippold, 1998). Nippold (1998) reported that proverbs are difficult to master compared to other figurative types. Comprehensions of proverbs appear in school age years and improve gradually during adolescent years.

2.2.3.6. Discourse

Narration is more complex than conversation as the listener plays a passive role and the speaker carries the linguistic load in conveying the information. Owens (2008) reported that children by 5-6 years able to produce simple narratives including personal experiences, fictionalized stories, and current situation referred as even casts. Early school children express narratives by manipulating the plot, content and causal structures. They are also able to move forward and backward in terms of time while expressing narratives whereas the younger children can move only forward. Narratives grow including multiple episodes as children mature. An episode refers to a statement that refers to a problem and elements related to the solution of that problem. By 5-6 years, children include only one episode whereas the older children include two

or more episodes. Ukrainetz et. al., (2005) in their study explained that children combine narrative elements in an artful manner of storytelling referred as expressive elaboration. They examined the narrative skills in 293 children in the age range 5-12 years where they divided the development of expressive elaboration in children into three categories such as appendages (cues to a listener regarding the beginning and ending of a story), orientations (elements providing more description and details to the characters) and evaluations (different ways in which narrator can convey perspectives of the character). The results revealed that all three categories improve along with the chronological age of the children.

2.2.9. Literature on language acquisition in Indian Context

There are several studies conducted on language acquisition among children in Indian population. Sreedevi (1976) studied acquisition of linguistic aspects in Kannada languagein the age range 2-3 years and the findings suggested that the ability to distinguish between noun and verb, basic types of sentence patterns such as nominal and verbal are acquired early in children. Among pronouns, first person singular, second person singular and third person singular are acquired earlier than others. The study also suggested that present and past tense forms are acquired earlier than future tense forms, transitive and intransitive verbs are acquired earlier than reflexive and causative verbs. Discourse consisted of three sentences in children in the age range 2-3 years. Case relation is expressed without explicit case markers and simple negative transformations were seen in this age group among others. There was no gender difference found in the development of linguistic skills.

Prema (1979) studied few aspects of development of language among Kannada speaking children in the age range five to six years. The results revealed that noun phrase of the children is simplified and structure of the sentence resembles adult like. Children were able to express all basic interrogative markers in yes/no, wh-type questions, free negative markers and pronomialized sentences. Transformational rules that derive negative sentences are still developing in children. Number and gender markers were still not stable in the children's' speech. By 5-6 years, noun phrase and verb phrase conjunctions were not acquired.

Roopa (1980) studied development of few syntactic aspects in 4-5 years Hindi speaking typically developing children and reported that the negative marker /nahi/ in the preverbal position of the sentence is indicative of negation.

Murthy (1981) studied the acquisition pattern of adjectives in tamil speaking children in the age range 2-5 years. Results revealed that adjectives of quantity and size were developed by 3.6-4.0 years whereas adjectives of colours were developed by 4 years of age.

Vijayalakshmi (1981) studied acquisition of syntax in 85 Kannada speaking children up to five years and developed a test for acquisition of syntax. The study concluded that acquisition of syntax showed systematic development in acquisition of more grammatical structures and different sentence types as age increases. Comprehension starts early and acquires faster than

expression till 3-6 years of age but as age increases, expressive skills develops faster and reaches comprehension after 3-6 years of age. Comprehension was better than the expression and this difference appeared between 3-6 years of age. Gender difference was seen in the performance where girls performed better than boys in the age group 2-3 years whereas boys picked up faster above three years and at around 5 years both performed similarly.

Rukmini (1994) studied the semantic and syntactic ability in the children in the age range 4-7 years and the result revealed that performance of the children increased along with the chronological age. Performance of the children was better for the reception tasks compared to expression and children performed better in syntactic tasks compared to semantic tasks.

Navitha (2009) studied the linguistic and cognitive skills of children in the age range of three to seven years by constructing a tool and the results revealed that the performance of the children increased as a function of age in that age group. There are several test batteries available for assessment of linguistic abilities in children.

2.3. Assessment of Language

Assessment involves forming impression and its purpose varies from screening, identification, classification, placing and programming and research (Venkatesan, 1991). Tests are of two types: screening and diagnostic. Screening tests are less time consuming and does not require detailed information or testing whereas diagnostic tests are time consuming and requires detailed assessment. In the past few decades, many developmental scales and standardized tools have been developed for the assessment of language acquisition in children. Some of the tests developed in both western and Indian studies are discussed as follows.

2.3.1. Language tests available in western context.

Ammons and Ammons (1958) developed a full range picture vocabulary test which is a short test of verbal comprehension for children in the age range of two years through adulthood. In this test the investigator utters target word and the child is instructed to point the picture that depicts the word.

The Michigan Picture Language Inventory (MPLI) was developed by Lera in the year 1958. The aim of the researchers was to provide quantitative data concerning the vocabulary of thee children along with their language structures. This test assesses linguistic abilities in children between the age range of 3 – 9 years. The language structures included in the test material are prepositions, adjectives, articles, demonstratives, adverbs, three verb tenses and few sentence patterns. Under vocabulary, the child will be instructed to name and point the picture of the word uttered by the examiner. Under language structure, missing word technique was used where the examiner describes every card within a particular class group which provides the context for the responses for the children. The examiner elicits oral responses from child for the key items in the card. This test compares the comprehension and expression of both vocabulary

but inventory of certain language structures puts limits on the kind of linguistic tasks which can also be tested.

The Illinois Test of Psycholinguistic Abilities (ITPA) was developed by Kirk, McCarthy and Kirk in the year 1961. It is a diagnostic test which is an adaptation of the communication model of Osgood (1957). The aim of the researchers was to provide information regarding reception, expression and organization abilities of the children in the age range of 2 to 10 years. The main drawback of the test is that it has not included examples for tasks such as word-order, questioning, negatives, possessives and subject-object identification in the test material.

Peabody Picture Vocabulary Test (PPVT) was developed by Dunn in the year 1965 and revised by Dunn and Dunn in the year 1981. The aim of the researchers was to assess the vocabulary comprehension in the age range of 2.6 to 4.11 years. It is an intelligence test consisting of 150 plates including four pictures in one card. This test provides Tables about Intelligent Quotient, Mental age and Percentile rank for the scores obtained across different age groups. As it is a vocabulary test, it does not provide information regarding general comprehension abilities of the children.

Test of Auditory Comprehension of Language (TACL) was developed by Carrow in the year 1968 and revised in the year 1973. The aim of the researchers was to assess the auditory comprehension of English language in children and also to determine the sequence where children comprehend the grammatical and lexical concepts of English in children in the age range of 3 to 9.11 years. This test consists of set of plates in which each plate consists of three black and white drawings where one depicts the test picture and other two depicts the contrasting ones. The child is instructed to point the named referent. The correct responses are scored as 1. The revised test includes 101 plates which assess the comprehension of selected nouns, principles of grammar and syntax and morphological structures. The test items are arranged based on the grammatical category and not based on the difficulty level. The normative is calculated for each structure in which 60% of the samples in each age group will be able to comprehend the items correctly.

Another test, Assessment of Child's Language Comprehension (ACLC) was developed by Foster, Giddan and Stark in the year 1972. The aim of the researchers was to assess the child's comprehension of grammatical units in children in the age range of 3 to 7 years. This test includes 50 plates and a recording sheet. Testing is conducted under four sections. Part A consists of 50 words which need identification of selected prepositions, verb nouns, verb forms and modifiers whereas part B, C and D uses the same words put together as two, three and four critical elements respectively. This test provides normative percentage for the correct responses along with the age.

Carrow Elicited Language Inventory (CELI) was given by Carrow in the year 1974. The aim of the researchers was to measure child's productive use of grammar. This test tells

about the specific grammatical structures contributing to the poor test performance of the child and also compares the performance with the peer group. It consists of grammatical categories such as nouns, verbs, pronouns, adjectives, adverbs, negatives, articles, prepositions, conjunctions, plurals and demonstratives. The child will be asked to imitate one phrase and 51 sentences included in the study. The responses can be audiotaped, transcribed and classified. The main score tells us the number of errors made by the child whereas the subscore tells the errors within each category.

Denver Developmental Screening Test was given by Frankenburg, Dodds & Fundal in the year 1975 (Revised). The researchers aimed at the early detection of delayed development of language in young children. This is a screening test consisting of four sections which includes personal-social, fine-motor-adaptive, language and gross motor skills. This test deals with more of the semantics and few of syntax. The test is administered to the parents in the presence of the child. The test provides normative which are compared after the test administration.

Test of Syntactic Abilities (TSA) was developed by Quigley, Steinkamp, Power and Jomen in the year 1978. It is an elaborate test of syntactic structures. This test is a battery including 20 individual diagnosing tests that covers nine major grammatical structures of English such as negation, naming, conjunction, questioning, verb processes, determiners, pronominalization, complementation, relativisation and nominalization. The 20 individual tests contains 70 multiple choice items in each. The test also contains a screening test which includes 120 test items that are selected from the diagnostic battery.

This test was initially standardized on students with profound hearing loss. This test is considered as both domain referenced and a normative test. This test helps in the diagnostic assessment of the language deficits along with providing the normative. The limitation of the study is that it is time consuming as it is a battery of different tests.

Test for Reception of Grammar (TROG) was given by Bishop in the year 1989. The aim of the study is to provide a profile pattern of errors. It is helpful in the assessment of children with speech and language disorders, severe/moderate learning disabilities, cerebral palsy, hearing loss and adults with acquired dysphasia. This test assesses the comprehension of English grammatical contrasts in children and compares their comprehension of individual structures with their peer group. The test includes stimuli that are presented in a four picture multiple-choice format along with lexical and grammatical foils. The stimuli are presented with increasing difficulty to assess the receptive grammar in secondary aged school children and young adults. The administration of the test may take around 20 minutes and the responses will be scored as correct and wrong.

Test of Language Development (TOLD) was given by Hammill and Newcorner in the year 1997. The aim of the study are as follows 1) To identify the children whose language performance is significantly below their peer group, 2) To determine specific strengths and

weakness of children, 3) To provide documentation on language progression as a consequence of special intervention programs in children and 4) To serve as a measurement device in research which involves language behavior of individuals. This test assesses the spoken language skills of the children by taking their oral responses. It includes 170 items assessing various activities such as pronunciation, word/ picture identification, word defining and sentence imitation. The subtests are: Picture vocabulary, oral vocabulary, grammatical comprehension, sentence imitation, grammatical completion, word articulation and word discrimination. The administration of the test takes around 40-60 min. Five types of scores are obtained such as raw scores, language ages, percentiles, standard scores and quotients for the responses obtained. Results are documented as standard scores, percentile rankings, age equivalents and also a language quotient.

Receptive Expressive Emergent Language Scale (REELS) was given by Bzoch and League in the year 1971. The aim of the researchers was to differentially diagnose major disorders affecting development of language. This scale also provides differences existing between the chronological age and his/her receptive language age and expressive language age for children in the age range 0 – 36 months. This test emphasizes on the process of receptive language, expressive language and inner language in children. Receptive language refers to the combined activity of all the auditory-perceptual and sensory-neural processes involving in the decoding and comprehending the oral language. Expressive language refers to the skills and processes involving in the encoding of meaning for the communication and inner language refers to the relation between the concepts as experienced through the mediation of language symbols by the central auditory recall and memory systems. The test administration takes around 30 to 40 minutes depending on the co-operation of the child. The responses will be scored as '+' if behavior is typical, '-', if behavior in not observed by the informant and '+/-', if behavior is emergent or only partially exhibited. The age range considered is less and does not give information about different aspects of language.

2.3.2. Language tests available in Indian Languages

Test for Acquisition of Syntax in Kannada (TASK) was given by Vijayalakshmi in the year 1981. The aim of the test is to provide the language acquisition profile of the children along with normative. This test helps in the assessment of syntactic aspects of language acquisition in Kannada speaking children in the age range 1 to 5 years. This test includes 323 test items and 19 subtests. This test assesses the receptive and expressive skills of several grammatical categories and sentence types. The administration of the test takes around 30 -40 minutes. It is applicable to a limited age range and valid for the children who speak Kannada.

A Syntax Screening test in Tamil (SST) was given by Sudha in 1981. The aim of the test was to assess the development of syntax in children and to identify the specific areas of syntactic deficits in children in the age range 2 – 5 years. This test was administered to 56 typically developing children who were divided into 6 groups. The scoring was done using a 5 point rating

scale. The reliability test was also carried out. Validity of the test was conducted by administering it to 3 children with language deficits. The administration of the test takes around 35 minutes for each child. This test includes 15 subtests such as negation, wh-questions, yes-no questions, persons, adjectives, tenses, determiners, post positions, degrees and pronominal terminations. Each subtest includes comprehension and expression tasks. The performance of the children for items in the comprehension shows the ability of understanding of syntactic forms and the items under expression demands that the child express the syntactic form verbally. It has limited age range and administered only for the children who knows Tamil.

A Language Test in Kannada for Expression in children was given by Kathyayini in 1984. The aim of the test is to evaluate the expression of various concepts such as nouns, verbs, gender, number, place markers, and persons for children in the age range 5 to 8 years. This test consists of 30 picture cards depicting daily activities. This was administered to 30 typically developing children, 6 hearing impaired and 2 mentally retarded children. It provides no cut off point to differentiate the deviant. The test has limited age range and the receptive skills are not tested. Validity of the test is poor and the scoring is not well defined.

Three Dimensional Language Test (3D-LAT) was given by Geetha in 1986. The test aimed at early diagnosis of childhood disorders that affects the development of language in children in the age range of 9 – 36 months. This scale helps in the assessment of three domains such as reception, expression and cognition. They are divided in to nine age groups based on the age at which language aspects emerge. Each age group includes three months except last age group which includes four months. The test includes 27 items under each domain. The administration of the test may take around 30 – 40 minutes. The responses are scored as '+' if behavior is typical, '-', if behavior in not observed by the informant and '+/-', if behavior is emergent or only partially exhibited. The test includes limited age range. Standardization was done on small population and validity is poor.

Test of Pragmatics in Tamil was given by Priya, in 1994. This test helps in identifying pragmatically disordered children in the age range 3 to 8 years. The test is based on the test design by Shulman (1986) given in the test called "test of pragmatic skills" consisting four tasks with examiner probes. This test assesses the use of language to signify the intension of the conversation. The pragmatic behaviors are assessed through a set of guided play interactions with the children. Each task is administered using the available material and dialogue. The administration of the test takes around 60 minutes. The test provides information on 10 categories such as greeting, requesting action, requesting information, naming, answering, informing, summoning, reasoning and closing conversation. The responses will be scored using 6 point rating scale based on the appropriateness and language sophistication of the child's response. The test has limited age range and small sample size. This test can be used only with children having Tamil as their mother tongue.

Kannada Language Test (KLT) was given by Shyamala in 2003. The aim of the study is to measure the receptive and expressive abilities of the children in the age range 3 to 7 years. This test consists of two parts such as part I which includes semantics and part II which includes syntax. Semantics includes 66 test items and 12 categories such as naming, semantic discrimination, lexical category. Semantic similarity, semantic anamoly, semantic contiguity, paradigmatic and syntagmatic relations, antonymy, synonymy, polar questions and homonymy. Syntax includes studying word structure, morphophonemic structures, plurals, tenses, case markers, person number gender marker. Conditional clauses, transitive/intransitives/causatives, sentence types, conjunction and quotatives, comparatives and participal construction. The administration of the test takes around 60 minutes depending on the co-operation of the child. The correct responses will be scored '1', partially correct responses will be scored '0.5' and incorrect responses will be scored as '0'. The obtained scores will be compared with the normative scores available and the language age will be calculated. This test is time consuming, language dependent and has limited age group.

Cognitive Linguistic Assessment protocol was given by Anuroopa and Shyamala in the year 2006. The aim of the researchers was to develop an assessment protocol to assess the cognitive and linguistic abilities in children speaking Kannada of age range 4 to 8 years. The protocol was developed on 24 typically developing children divided into 4 age groups with one year interval including 3males and 3 females in each group. The administration of the test takes more than 60 minutes. The items are classified into three sections such as attention, memory and problem solving where each section includes auditory and visual section as subsections. The test is easy to score and assess different cognitive linguistic skills. The correct responses will be scored as '1' and wrong responses will be scored as '0'.

Comprehensive Language Assessment Tool for children (CLAT-C) was given by Navitha and Shyamala, in 2009. It is a language test that helps in the assessment of language and cognitive abilities of children in the age range 3 to 9 years in Indian context. It includes three domains: reception, expression and cognition. This tool is administered to parents/caregivers of the participants. Separate recording sheet is available to record the responses of the child. Normative scores are available in the manual to compare the performance of the child.

During the language assessment of the children, they may not cooperate which yields to varied results. Few toddlers may cooperate and perform better where as few toddlers may be reluctant to interact with the investigator as the testing situation appears highly artificial. This consumes more time as a result direct testing have limited utility. A screening tool should be easy, simple, less time consuming. The language of the infants, toddlers and school going children refers to concepts learnt from their environment. Therefore interviewing parents provide information on linguistic skills of the child in a better way. Based on the information given by parents, it is easy to differentiate the deviant from the normal.

From the review of the literature, it is observed that there are very limited screening tools available for the assessment of language acquisition as most of the tests are diagnostic and are time consuming. Also, there are very limited screening tools available in Indian languages for the children in the age range three to seven years. The available screening tools such as REELS, RELT, 3D-LAT etc. are developed few decades ago and children in the present generation are acquiring the linguistic skills earlier i.e., few of the skills mentioned in the higher age group are achieved by the younger age group in the present generation. Due to this there is a need to modify and re-standardize the questions in the available screening tools according to linguistic skills of children in the current generation.

One such screening tool which is commonly used for clinical purpose is the non-standardized Receptive Expressive Language Test (RELT). This tool was developed by the Department of Speech Language Pathology (All India Institute of Speech and Hearing) in the year 1984. This scale helps in the assessment of receptive and expressive language skills of children in the age range of three to seven years. But there are several limitations in this scale. Many of the skills mentioned under receptive and expressive skills for the higher age group are observed in much younger age groups. There is a disparity in the selection of items for different age groups for e.g., certain items that are assessed under expressive domains for younger age groups are tested again under receptive domain for the higher age groups. Therefore a mismatch is observed between receptive and expressive domains vis-à-vis age. Two or more skills are assessed in a single question and repetitions of the skills are observed across different age groups.

Considering these drawbacks of RELT, the present study was aimed at modifying and standardizing RELT according to linguistic skills of the children in the age range of three to seven years.

CHAPTER III

METHOD

The study was conducted under three phases viz, pilot study, re-standardization and validation. These phases are detailed in the following section.

3.2. Participants

The participants belonged to eight age groups including 3.0-3.6, 3.6-4.0, 4.0-4.6, 4.6-5.0, 5.0-5.6, 5.6-6.0, 6.0-6.6 and 6.6-7.0 years. The children for the study were selected from schools, play homes, preschools, residential homes etc in and around Mysore, Karnataka, India. A total of 80 children were considered for the pilot study comprising of 5 males and 5 females in each age group from Manasa Gangothri school, Tom and Jerry play home T.K. layout and Kidzee preschool, Saraswathi Puram, Mysore. 240 children were included for the re-standardization phase including 15 male and 15 females in each age group from various schools in and around Mysore city viz., Green Wings, Shreematha Kendra, Champaka academy, Euro kids, Green Wings, Sevabharthi, Ninos Nest, Christ Public School, Universal Academy, Vijayavittala, Jumbo Kids, Bharathiya Vidya Bhavan and JSS Public School. Finally for the validation phase a total of 160 typically developing children including 10 male and 10 females in each age group were considered from school, Vijaya Vittala school, Kautilya Vidyalaya, Pushkarni and Sevabharthi school. Clinical validation was performed on children with hearing impairment (20 males and 10 females) and children with intellectual disability (12 males and 6 females) were drawn from Department of Clinical Services, AIISH. the total number of participants included in the current study were 528.

3.3 Criteria for selection of the participants

3.3.1 Inclusion criteria for the participants

The participants considered in the present study were between the age of three to seven years and had Kannada as their native language. Typically Developing Children (TDC) who had age

appropriate language functions as evaluated using the Kannada Language Test, (Shyamala, Jayaram & Vijayashree, 2004) were included in the present study during pilot study phase.

3.3.2 Exclusion criteria for the participants

Children with history or presence of any speech and language deficits, neurological, psychological and/or sensory deficits, poor vision, poor intelligence, cognitive deficits, or physical anomalies were excluded from the study.

3.4 Materials

The materials used for the present study were Kannada Language Test, Functional Analysis of Children's Classroom Talk (FACCT) Questionnaire, Receptive Expressive Language Test (RELT), Pictures for the collection of discourse samples and Video recorder. The description of materials used in the present study is as follows:

3.4.1 Kannada Language Test

Kannada Language Test was developed as a part of UNICEF project given in the year 1990 and was later revised by Shyamala, Jayaram and Vijayashree in 2004. This test helps in identifying the language level of children in the age range of three to seven years in terms of receptive and expressive skills. The components of the language considered under both these categories are semantics and syntax. This test was used to screen the participants for the present study and for identifying the language appropriateness.

3.4.2 Functional Analysis of Children's Classroom Talk (FACCT) Questionnaire

Functional Analysis of Children's Classroom Talk is a questionnaire developed by Kumpulainen and Wray (1997) for the qualitative analysis of discourse in children. This questionnaire includes 16 functions which are as shown in the Table 9. In the current study, FACCT was used to qualitatively analyze the discourse samples of the children that were video recorded during the pilot study.

Table 9: *Sections of the Functional Analysis of Children's Classroom Talk (FACCT) questionnaire*

Sl.No	Function	Code	Description
1	Informative	(I)	Providing information, from previous ideas, pre-existing knowledge, by manipulating information resources, or from the situational context
2	Interrogative	(Q)	Asking questions in order to get information or social approval
3	Responsive	(R)	Answering questions
4	Organisational	(OR)	Organising and controlling behavior
5	Judgmental	(J)	Expressing agreement or disagreement
6	Argumentational	(ARG)	Reasoning in language
7	Compositional	(C)	Creating written or spoken text not earlier mentioned, revising or dictating
8	Reproductional	(RP)	Reproducing previously encountered language either by reading or repeating
9	Experiential	(E)	Expressing personal experiences
10	Expositional	(EXPO)	Language accompanying the demonstration of a phenomenon
11	Hypothetical	(HY)	Putting forward a hypothesis
12	External thinking	(ET)	Thinking aloud in accompaniment of a task
13	Imaginative	(IM)	Introducing or expressing imaginative situations
14	Heuristic	(HE)	Expressing discovery
15	Affectional	(AF)	Expression of personal feelings
16	Intentional	(IN)	Signalling intention to participate in discourse

3.4.3 Collection of discourse samples

To collect the discourse samples of the children, different tasks were carried out such as, picture description, narration and conversation. For the picture description task, pictures were taken from the text books and story books of the children for children between the age range of three to seven years such as pictures of market, park and living room. Discourse sample was found to be useful for gathering larger spoken language data in children. Hence the same was incorporated.

Narration task included four common stories which were selected by going through text books, story books for children between the age range of three to seven years and also by interviewing the teachers. The stories selected for the narration task were 'Thirsty crow',' 'The greedy dog', 'The fox and the grapes' , 'The monkey' and 'The cap seller'. Conversation was carried out using topics like 'daily routine', 'vacation' and 'favorite TV shows'. Discourse samples of 80 children who participated in the pilot study were video recorded using Canon ZR 90 digital camcorder of 16 mega pixels with inbuilt microphone.

3.5 Procedure

3.5.1 Ethical concerns

Informed consent proposed by All India Institute of Speech and Hearing Ethical guidelines for Bio-Behavioral Research (2009) was used to obtain written consent from the teachers, parents/guardians of the participants before consideration into the study. They were informed regarding the objectives of the study and the type of information that were gathered from the children including the confidentiality of the data.

3.5.2 Phase I: Pilot study

For the pilot study, 80 typically developing children belonging to the age groups of three to seven years were considered. They were grouped into 3.0-3.6, 3.6-4.0, 4.0-4.6, 4.6-5.0, 5.0-5.6, 5.6-6.0, 6.0-6.6 and 6.6-7.0 years (5 males and 5 females in each age group).

The parents/guardians of these children were interviewed individually and the general information, including demographic details of the children such as age/sex, address and contact

details of parents, languages known, handedness, education, information about hearing and vision, any history of neurological/ psychological illness etc were gathered.

Assessing language skills of children

Kannada Language Test (Shyamala, Jayaram & Vijayashree in 2004) was administered on each child or participant to confirm whether the language age of the child is equivalent to the chronological age. The mean and standard deviation of the scores obtained for KLT for all the age groups are as shown in Table 10.

Table 10*: Mean and SD for performance of Kannada Language Test of children across all the eight age groups during pilot study*

Sl.No	Age group	Mean and S.D.	RLA		ELA	
			Male	Female	Male	Female
1	3.0 - 3.6	M	42.00	46.30	28.40	30.90
		S.D.	1.62	4.96	2.65	5.11
2	3.6 – 4.0	M	48.50	45.70	36.50	34.40
		S.D.	6.49	3.11	3.10	3.78
3	4.0 - 4.6	M	53.50	51.40	38.20	39.40
		S.D.	5.86	5.56	3.19	5.62
4	4.6 – 5.0	M	55.50	61.30	43.40	3.17
		S.D.	7.10	46.70	5.66	3.68
5	5.0 – 5.6	M	59.90	65.30	46.00	52.10
		S.D.	4.21	5.06	9.23	7.46
6	5.6 – 6.0	M	65.00	63.20	54.40	52.00
		S.D.	3.85	5.36	3.79	7.21
7	6.0 – 6.6	M	69.00	68.00	58.80	55.70
		S.D.	0.00	5.06	4.086	3.29
8	6.6 - 7.0	M	68.00	66.50	59.90	54.80
		S.D.	1.36	4.24	2.40	6.53

M = Mean, S.D = Standard Deviation, RLA = Receptive Language Age, ELA = Expressive Language Age

RELT was then administered on each child by interviewing parents or care takers. They were also asked informal questions regarding the language skills of their children to supplement the findings of RELT. Additional information on language skills was collected by discourse samples as detailed information on language skills according to the developmental pattern of the children in the age range 3 to 7 years was not available using RELT alone.

The discourse samples of the children were collected on three different tasks viz., picture description, story narration and conversation. The samples were recorded using Canon ZR 90 Digital video camcorder with an inbuilt microphone during the above mentioned activities. Each participant was also provided with intermittent breaks whenever required based on the temperament of the child. Total recording time ranged from 15 - 20 minutes for each child depending on their co-operation. The recorded discourse samples were qualitatively rated using Functional Analysis of Children's Classroom Talk (Kumpulainen & Wray, 1997). The discourse samples were analyzed for 16 functions as mentioned in Table 2. Each function was scored using 3 point rating scale (2 = Present, 1 = partially present and 0 = absent).

Developmental aspects of speech and language skills before preparation of skill list TDC in the age range of 3 – 7 years were also gathered from literature in the form of books and journal articles. Further information regarding the same was deduced by referring to text books from the schools and by interviewing teachers regarding the concepts taught in schools and play homes.

Preparation of skill list

Administration of RELT revealed that there were various questions/statements which were not applicable for the children between 3- 7 years. Some questions/statements were repeated, some were not age appropriate. These inappropriate questions/statements were eliminated whereever necessary. For example., R 72 (42-48 months) recognizes time and pictures and all major colors. E 76 (48-54 months): used below, inside, on top, out, what, where, who, why, whose, how and no (prepositions and 'wh' questions. E 91 (62-66 months) uses all 'wh' questions, yes questions, writing.

The interview with the teachers and parents along with the information from reviewing the school books provided further information. This information consisted of the receptive and expressive language skill to which these children are subjected to in a day to day basis. This was further collaborated with the discourse analysis of the children's discourse samples. This enabled the researcher to further list the various receptive and expressive language skills which are likely

to be seen in the targeted age group. Further this information was combined with the additional information present in the RELT.

Thus a list of 135 and 144 questions under receptive and expressive skills respectively were listed for children of three to seven years of age. The skills listed under receptive and expressive domains are given in Appendix A and Appendix B respectively. Since the main focus of the study was to assess the linguistic skills rather than academic skills, questions related to reading, writing and mathematical skills were removed from the list.

3.5.3 Phase II: Re-standardization of the questionnaire.

Two hundred and forty typically developing Kannada speaking children between 3 to 7 years of age who were grouped into 8 groups viz., 3.0-3.6, 3.6-4.0, 4.0-4.6, 4.6-5.0, 5.0-5.6, 5.6-6.0, 6.0-6.6 and 6.6-7.0 years were included for the purpose of re-standardization.

The parents were interviewed to gather information regarding the demographic details. The parents were enquired regarding the linguistic abilities of their children using questionnaire consisting of list of receptive and expressive skills (present in Appendix A and Appendix B) for receptive and expressive language skills respectively. The responses were rated using a three point rating scale as '1 = achieved', '0.5 = Emerging' and '0 = Not achieved' for each skill in the list. Finally, the interview was held without any distractors in a noise free and closed environment.

Followed by administration of questionnaire, 75% criterion was followed for considering particular skills to be achieved by the children in that particular age range. The questions for which 75% of the children were able to perform were selected for that particular age group under both receptive and expressive domains. Finally the questionnaire included 64 skills which included eight skills in each age group under both receptive and expressive domains.

Inter-judge reliability:

The shortlisted list of skills followed by the administration of Appendix A and Appendix B which include list of receptive and expressive skills respectively were then given to three experienced speech language pathologists for reliability check. They were asked to rate each skill as "applicable =1" and "not applicable = 0" to the given age group. The skills which were scored 2 or above were retained and the rest of the skills were eliminated. Thus a final list consisting of 8 skills under receptive and 8 skills under expressive for each age group was created. Thus Modified-Receptive Expressive Language Test (M-RELT) was created which consisted of 64 questions under receptive skills and 64 skills under expressive skills divided equally and age appropriately between 8 age groups.

3.5.4 Phase III: Validation of M-RELT.

Validation of the M-RELT was carried out by administering the same on 160 TDC in the age range of three to seven years including 20 children (10 males and 10 females) in each age group and on 48 children with communication disorders [children with hearing impairment (30) and children with intellectual disability (18)]. The details of clinical population isgiven in Table 11 and Table 12. The information for M-RELT was obtained by interviewing the parents of the children involved in the study. The responses were marked as "1" if the child has achieved the skills, 0.5 if it is potentially achieved and "0" if the skill is not achieved. Based on the scoring, it was decided whether the receptive and expressive skills of the child fall in that particular age group. The obtained scores were subjected to statistical analysis using SPSS 21.0. The finalized M-RELT manual with instructions is provided in Appendix C.

Table 11*:Details of children with hearing impairment*

Sl. no	Participant	Age (in years)	Gender	Diagnosis
1	HI 1	3.6	M	DSL-HL
2	HI 2	4	M	DSL-HL
3	HI 3	4	F	DSL-HL
4	HI 4	4.4	F	DSL-HL
5	HI 5	4.9	F	DSL-HL
6	HI 6	5.4	M	DSL-HL
7	HI 7	5.6	F	DSL-HL

8	HI 8	5.6	F	DSL-HL
9	HI L9	6	F	DSL-HL
10	HI 10	6	M	DSL-HL
11	HI 11	6.6	M	DSL-HL
12	HI 12	6.2	M	DSL-HL
13	HI 13	6.5	F	DSL-HL
14	HI 14	7	M	ISL-HL
15	HI 15	7	M	ISL-HL
16	HI 16	7.6	M	DSL-HL
17	HI 17	8	M	ISL-HL
18	HI 18	8	F	DSL-HL
19	HI 19	8	M	ISL-HL
20	HI 20	8	M	ISL-HL
21	HI 21	8	M	ISL-HL
22	HI 22	8	M	ISL-HL
23	HI 23	8.6	M	ISL-HL
24	HI 24	9	M	ISL-HL
25	HI 25	10	F	ISL-HL
26	HI 26	10	M	ISL-HL
27	HI 27	11	F	ISL-HL
28	HI 28	12	M	ISL-MA-HL
29	HI 29	12	M	ISL-HL
30	HI 30	17	M	ISL-HL

HI = children with hearing impairment, M = male, F = Female, DSL-HL = delayed speech and language with hearing impairment, ISL-HL= = inadequate speech and language with hearing impairment.

Table 12: *Details of children with intellectual disability*

Sl.no	**Participant**	**Age (in years)**	**Gender**	**Diagnosis**
1	MR1	5	M	DSL-MR
2	MR2	5.5	M	DSL-MR
3	MR3	6	F	DSL-MR
4	MR4	6.4	F	DSL-MR
5	MR5	7	M	DSL-MR
6	MR6	8	F	ISL-MR
7	MR7	8	M	ISL-MR
8	MR8	8	M	ISL-MR
9	MR9	10	M	ISL-MR
10	MR10	10	F	ISL-MR
11	MR11	10	M	ISL-MR
12	MR12	10.9	M	ISL-MR
13	MR13	10	F	ISL-MR

14	MR14	12	M	ISL-MR
15	MR15	13	M	ISL-MR
16	MR16	13	M	DSL-MR
17	MR17	14	F	ISL-MR
18	MR18	16	M	ISL-MR

MR = children with mental retardation, M = male, F = Female, DSL-MR= delayed speech and language with mental retardation, ISL-MR = inadequate speech and language with mental retardation.

CHAPTER IV

RESULTS AND DISCUSSION

The present study aimed to modify and re-standardize the Receptive Expressive Language Test for children between the age ranges of 3 to 7 years. Further it aimed to validate the modified and re-standardized Receptive Expressive Language Test for typical and atypical children.

4.1 Phase I: Analysis of Pilot study data

4.1.1 Results related to Functional Analysis of Children's Classroom Talk (FACCT) Questionnaire.

FACCT was used to qualitatively analyze the discourse samples of the children that were video recorded during the pilot study. The discourse samples were analyzed for 16 parameters of FACCT using 3 point rating scale (2 = Present, 1 = partially present and 0 = absent).

Inter Observer rating of FACCT

There were three judges (Speech Language Pathologists) who participated for the qualitative rating of the discourse samples. All the three judges rated 100% of the samples. The qualitative ratings obtained from the three judges were subjected to inter-judge reliability tests using Cronbach's Alpha co-efficient. The co-efficient of reliability is depicted in table 13

Table 13*: The co-efficient of reliability for the parameters of FACCT*

Parameters/ Groups	I	II	III	IV	V	VI	VII	VIII
Informative	0.732	0.890	0.895	0.895	0.911	0.755	0.752	0.719
Interrogative	0.952	0.908	0.856	0.856	0.877	0.930	0.793	0.911
Responsive	0.796	0.842	0.767	0.767	0.902	0.866	0.816	0.877
Organisational	0.971	0.944	0.862	0.862	0.778	0.839	0.759	0.902
Judgmental	0.714	0.874	0.919	0.919	0.944	0.719	0.910	0.778
Argumentational	0.947	0.860	0.752	0.752	0.797	0.911	0.919	0.944
Compositional	0.950	0.871	0.793	0.793	0.950	0.877	0.895	0.797
Reproductional	0.920	0.881	0.816	0.816	0.920	0.902	0.856	0.950
Experiential	0.713	0.892	0.759	0.759	0.713	0.778	0.920	0.920
Expositional	0.944	0.793	0.910	0.910	0.944	0.944	0.793	0.713
Hypothetical	0.816	0.816	0.919	0.919	0.816	0.797	0.944	0.944
External thinking	0.944	0.759	0.778	0.920	0.944	0.950	0.808	0.816

Imaginative	0.860	0.759	0.759	0.793	0.918	0.920	0.945	0.944
Heuristic	0.871	0.910	0.910	0.944	0.816	0.797	0.944	0.918
Affectional	0.881	0.919	0.919	0.808	0.816	0.797	0.944	0.816
Intentional	0.759	0.759	0.793	0.945	0.816	0.797	0.944	0.944

I = 3-3.6 years, II= 3.6-4 years, III= 4-4.6 years, IV = 4.6-5 years, V = 5-5.6 years, VI= 5.6-6 years, VII= 6-6.6 years, VIII= 6.6-7 years

As observed from the Table 13 there was good inter-judge reliability rating for the parameters of FACCT. Hence the majority rating by the three judges was subjected to further statistical analyses.

The descriptive statistics of the analyses related to FACCT is as follows. The presence of each skill in maximum number of children was tabulated. The descriptive statistics was obtained for the same. This further helped in understanding which particular skill is achieved in which age group of the participants. Table 14, 15, 16 and 17 provides the information of the same. Figure 1, 2, 3 and 4 are the graphical representation for the descriptive statistics obtained for FACCT related analysis.

Table 14: *Details of number of participants who had acquired/ not acquired the linguistic skills (Organisational, Responsive, Interrogative, & Informative) in each age group. .*

Age group/	**Organizational**			**Responsive**			**Interrogation**			**Informativeness**		
Parameters	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**
3-3.6	3	7	0	0	0	10	7	3	0	0	10	0
3.6-4.0	2	8	0	0	0	10	3	7	0	0	10	0
4.0-4.6	0	10	0	0	0	10	0	10	0	0	0	10
4.6-5.0	0	9	1	0	0	10	0	8	2	0	0	10
5.0-5.6	0	3	7	0	0	10	0	0	10	0	0	10
5.6-6.0	0	0	10	0	0	10	0	0	10	0	0	10
6.0-6.6	0	0	10	0	0	10	0	0	10	0	0	10
6.6-7.0	0	0	10	0	0	10	0	0	10	0	0	10

2 = Present, 1 = partially present and 0 = absent

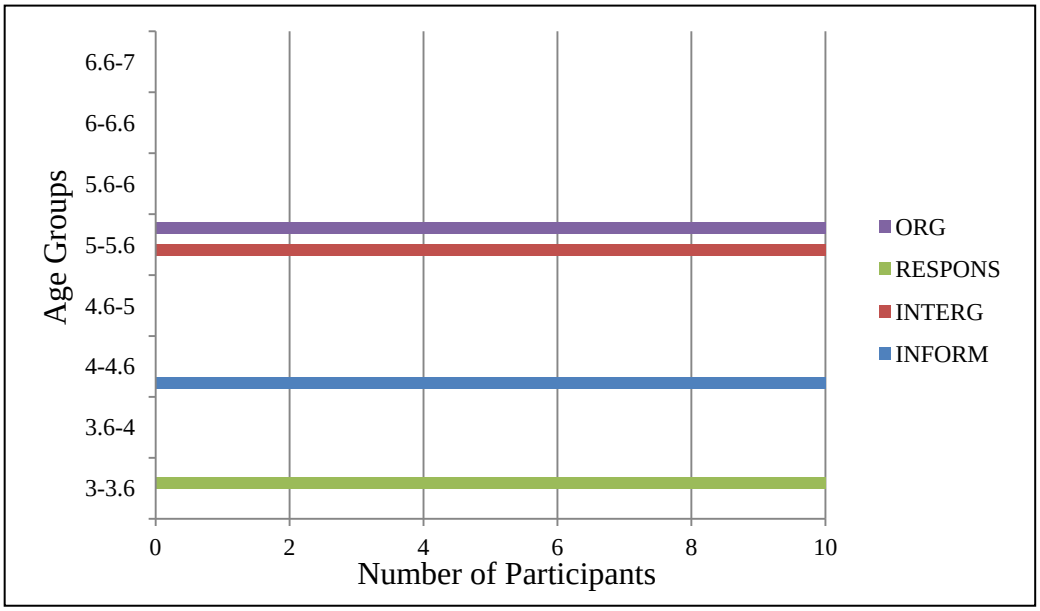

Figure 1: Graphical representation of acquisition of linguistic skills (Organisational, Responsive, Interrogative, & Informative) in each age group. (ORG= Organisational, RESPONS= Responsive, INTERG = Interrogative, INFORM = Informative)

As observed from Table14 and figure 1 responsiveness is achieved in children from the age of 3-3.6 years. Informativeness is achieved by the age of 4- 4.6 years. Organizational and interrogation skills are acquired by the age of 5-5.6 years.

Table 15: *Details of number of participants who had acquired/ not acquired the linguistic skills (Reproductional, Compositional, Argumentational, & Judgmental) in each age group.*

Age group/ Parameters	**Reproductional**			**Compositional**			**Argumental**			**Judgmental**		
	0	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**
3-3.6	0	10	0	10	0	0	0	4	6	10	0	0
3.6-4.0	0	10	0	10	0	0	0	1	9	10	0	0
4.0-4.6	3	7	0	7	3	0	0	0	10	4	6	0
4.6-5.0	0	5	5	4	6	0	0	0	10	6	4	0
5.0-5.6	0	4	6	4	6	0	0	0	10	0	10	0
5.6-6.0	0	2	8	1	4	5	0	0	10	1	6	3
6.0-6.6	0	0	10	0	5	5	0	0	10	0	4	6
6.6-7.0	0	0	10	0	6	4	0	0	10	0	0	10

2 = Present, 1 = partially present and 0 = absent

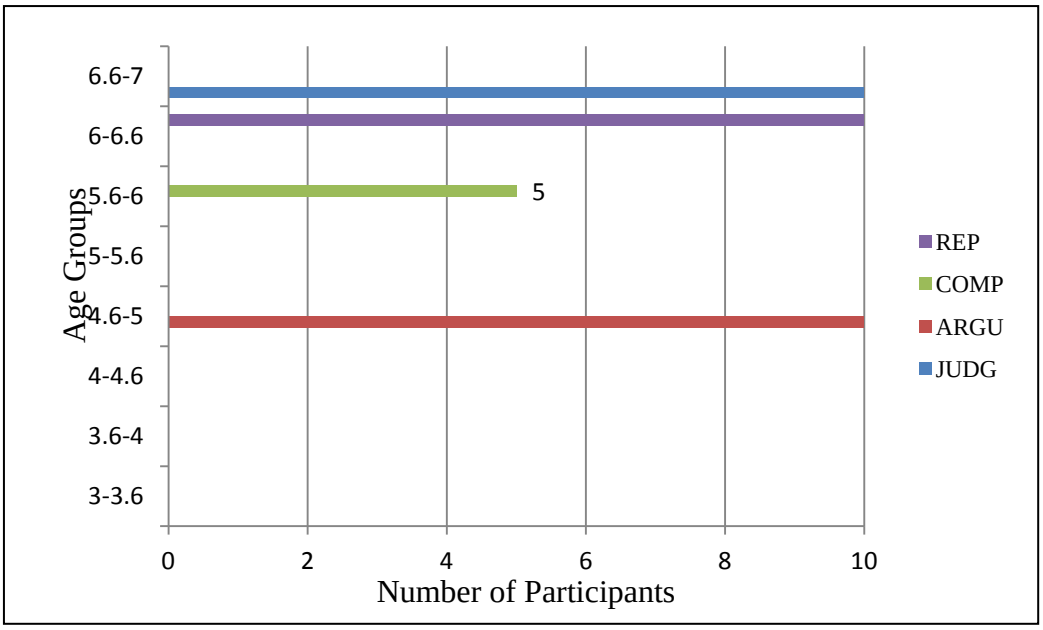

Figure 2: Graphical representation of acquisition of linguistic skills (Reproductional, Compositional, Argumentational, & Judgmental) in each age group (REP = Reproductional , COMP = Compositional, ARGU = Argumentational, JUDG = Judgmental).

As observed from Table 15 and figure 2 argumentationl skill is achieved in children from the age of 4.6-5years. Compositional skill is partially achieved in the age range of 5.6-6 years. Reproductional and judgmental skills are acquired by the age of 6-6.6 years and 6.6 – 7 years respectively.

Table 16: *Details of number of participants who had acquired/ not acquired the linguistic skills (External thinking, Hypothetical, Expositional, & Experiential) in each age group.*

Age group/ Parameters	**External Thinking**			**Hypothetical**			**Expositional**			**Experiential**		
	0	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**
3-3.6	7	3	0	10	0	0	0	4	6	0	4	6
3.6-4.0	9	1	0	9	1	0	0	5	5	0	4	6
4.0-4.6	5	5	0	10	0	0	0	4	6	0	0	10
4.6-5.0	5	5	0	7	2	1	0	2	8	0	0	10
5.0-5.6	4	1	5	5	5	0	0	0	10	0	0	10
5.6-6.0	0	3	7	5	5	0	0	0	10	0	0	10
6.0-6.6	0	2	8	0	6	4	0	0	10	0	0	10
6.6-7.0	0	3	7	0	4	6	0	0	10	0	0	10

2 = Present, 1 = partially present and 0 = absent

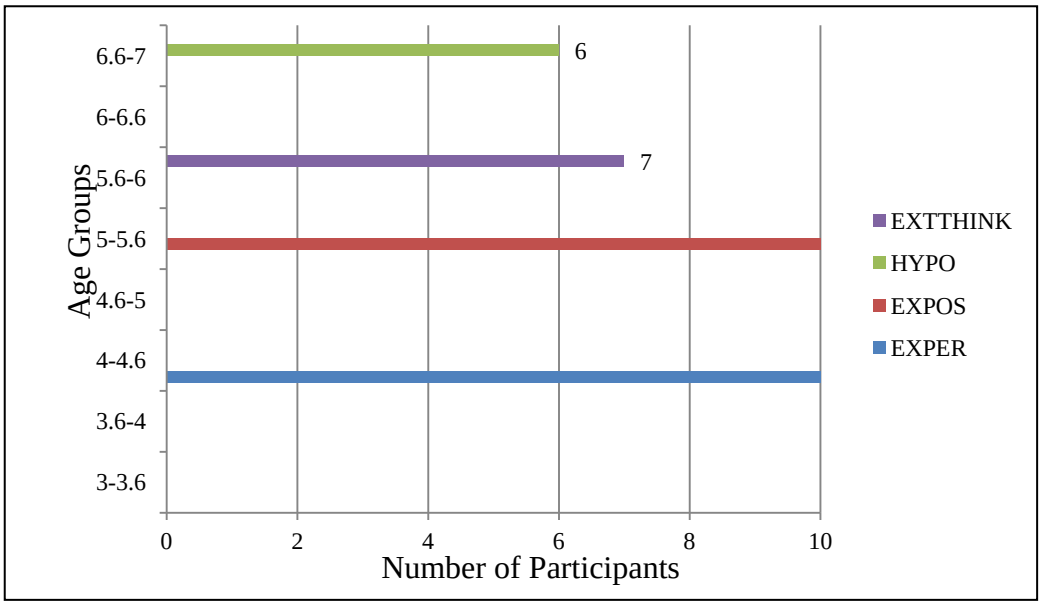

Figure 3: Graphical representation of acquisition of linguistic skills (External thinking, Hypothetical, Expositional, & Experiential) in each age group (EXTHINK = External thinking, HYPO = Hypothetical, EXPOS = Expositional, EXPER = Experiential).

As observed from Table 16 and figure 3 experiential skill is achieved in children from the age of 4-4.6 years, expositional skill by the age of 5- 5.6 years. External thinking is almost achieved by the age of 5.6- 6 years. But, hypothetical skill is partially till the age of 6.6-7 years.

Table 17: *Details of number of participants who had acquired/ not acquired the linguistic skills (Intentional, Affectional, Heuristic, & Imaginative) in each age group.*

Age group/ Parameters	**Intentional**			**Affectional**			**Heuristic**			**Imaginative**		
	0	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**
3-3.6	0	3	7	0	0	10	0	10	0	0	10	0
3.6-4.0	0	1	9	0	0	10	0	9	1	0	9	1
4.0-4.6	0	4	6	0	1	9	1	8	1	1	8	1
4.6-5.0	0	2	8	0	3	7	1	7	2	1	7	2
5.0-5.6	0	1	9	0	1	9	0	3	7	0	3	7
5.6-6.0	0	2	8	0	3	7	0	2	8	0	2	8
6.0-6.6	0	1	9	0	1	9	0	0	10	0	0	10
6.6-7.0	0	1	9	0	1	9	0	0	10	0	0	10

2 = Present, 1 = partially present and 0 = absent

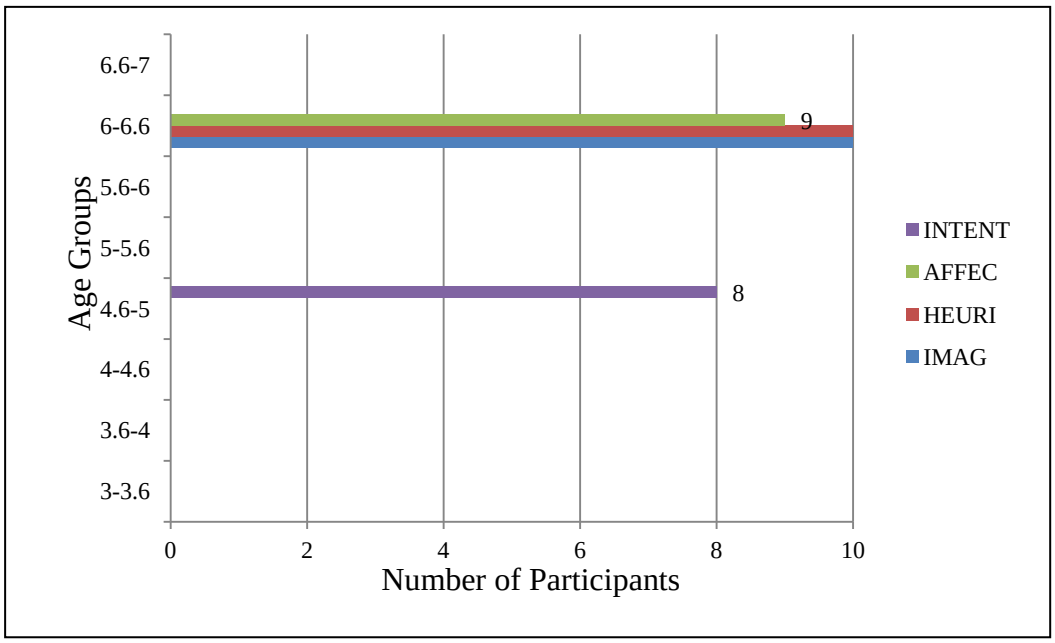

Figure 4: Graphical representation of acquisition of linguistic skills ((Intentional, Affectional, Heuristic, & Imaginative) in each age group (INTENT = Intentional, AFFEC = Affectional, HEURI = Heuristic, IMAG = Imaginative).

As observed from table17 and figure 4 Intentional skill is achieved in children from the age of 4.6-5 years. The skills such as affectional, heuristic and imaginative are achieved by the age of 5.6-6 years. Organizational and interrogation skills are acquired by the age of 5-5.6 years.

4.1.2 Results related to Receptive Expressive Language Test

RELT was administered to all the 80 participants during the pilot study. The results of RELT for each age group is depicted in table18 to table 25.

Table 18: *Result of RELT on TDC in the age range of 3-3.6years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	3.2	M	3.6-4.0	3.6-4.0
2	3.3	M	3.6-4.0	3.6-4.0
3	3.3	M	3.6-4.0	3.6-4.0
4	3.4	M	3.0-3.6	3.0-3.6
5	3.5	M	3.6-4.0	3.6-4.0
6	3.1	F	3.6-4.0	3.6-4.0
7	3.5	F	4.0-4.6	3.6-4.0
8	3.5	F	3.6-4.0	3.6-4.0
9	3.0	F	3.6-4.0	3.6-4.0
10	3.5	F	3.6-4.0	3.6-4.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 19: *Result of RELT on TDC in the age range of 3.6-4 years*

Sl.no	**Age (in years)**	**Gender**	**RLA**	**ELA**
1	3.6	M	3.6-4.0	3.6-4.0
2	3.6	M	4.0-4.6	4.0-4.6
3	3.6	M	3.6-4.0	3.6-4.0
4	3.8	M	4.0-4.6	4.0-4.6
5	3.7	M	3.6-4.0	3.6-4.0
6	3.9	F	4.0-4.6	4.0-4.6
7	3.10	F	4.0-4.6	4.0-4.6
8	3.11	F	4.0-4.6	4.0-4.6
9	3.7	F	4.0-4.6	4.0-4.6
10	3.8	F	4.0-4.6	4.0-4.6

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 20: *Result of RELT on TDC in the age range of 4-4.6 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	4.4	M	4.6-5.0	4.6-5.0
2	4.4	M	4.6-5.0	4.6-5.0
3	4.2	M	4.6-5.0	4.6-5.0
4	4.3	M	4.6-5.0	4.6-5.0
5	4.5	M	4.6-5.0	4.6-5.0
6	4.0	F	4.6-5.0	4.6-5.0
7	4.1	F	4.6-5.0	4.6-5.0
8	4.0	F	4.6-5.0	4.6-5.0
9	4.4	F	4.6-5.0	4.6-5.0
10	4.2	F	4.0-4.6	4.0-4.6

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 21: *Result of RELT on TDC in the age range of 4.6 - 5 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	4.7	M	5.0-6.0	5.0-6.0
2	4.8	M	5.0-6.0	5.0-6.0
3	4.11	M	5.0-6.0	5.0-6.0
4	4.8	M	4.6-5.0	5.0-6.0

5	4.8	M	5.0-6.0	5.0-6.0
6	4.10	F	5.0-6.0	5.0-6.0
7	4.9	F	5.0-6.0	5.0-6.0
8	4.10	F	5.0-6.0	5.0-6.0
9	4.9	F	5.0-6.0	5.0-6.0
10	4.11	F	5.0-6.0	5.0-6.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 22: *Result of RELT on TDC in the age range of 5-5.6 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	5.2	M	5.0-6.0	5.0-6.0
2	5.2	M	6.0-7.0	6.0-7.0
3	5.3	M	6.0-7.0	6.0-7.0
4	5.4	M	6.0-7.0	6.0-7.0
5	5.5	M	5.0-6.0	5.0-6.0
6	5.5	F	6.0-7.0	6.0-7.0
7	5.4	F	6.0-7.0	6.0-7.0
8	5.2	F	6.0-7.0	6.0-7.0
9	5.3	F	6.0-7.0	6.0-7.0
10	5.4	F	6.0-7.0	6.0-7.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 23: *Result of RELT on TDC in the age range of 5.6-6 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	5.6	M	>6.0-7.0	>6.0-7.0
2	5.6	M	>6.0-7.0	>6.0-7.0
3	5.8	M	>6.0-7.0	>6.0-7.0
4	5.8	M	>6.0-7.0	>6.0-7.0
5	5.10	M	>6.0-7.0	>6.0-7.0
6	5.11	F	>6.0-7.0	>6.0-7.0
7	5.9	F	>6.0-7.0	>6.0-7.0
8	5.10	F	>6.0-7.0	>6.0-7.0
9	5.8	F	>6.0-7.0	>6.0-7.0
10	5.9	F	>6.0-7.0	>6.0-7.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 24: *Result of RELT on TDC in the age range of 6-6.6 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	6.4	M	>6.0-7.0	>6.0-7.0
2	6.5	M	>6.0-7.0	>6.0-7.0
3	6.5	M	>6.0-7.0	>6.0-7.0
4	6.5	M	>6.0-7.0	>6.0-7.0
5	6.4	M	>6.0-7.0	>6.0-7.0
6	6.4	F	>6.0-7.0	>6.0-7.0
7	6.3	F	>6.0-7.0	>6.0-7.0
8	6.4	F	>6.0-7.0	>6.0-7.0
9	6.3	F	>6.0-7.0	>6.0-7.0
10	6.4	F	>6.0-7.0	>6.0-7.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

Table 25: *Result of RELT on TDC in the age range of 6.6-7 years*

Sl.no	Age (in years)	Gender	RLA	ELA
1	6.10	M	>6.0-7.0	>6.0-7.0
2	6.7	M	>6.0-7.0	>6.0-7.0
3	6.9	M	>6.0-7.0	>6.0-7.0
4	6.11	M	>6.0-7.0	>6.0-7.0
5	6.8	M	>6.0-7.0	>6.0-7.0
6	6.7	F	>6.0-7.0	>6.0-7.0
7	6.9	F	>6.0-7.0	>6.0-7.0
8	6.11	F	>6.0-7.0	>6.0-7.0
9	6.10	F	>6.0-7.0	>6.0-7.0
10	6.8	F	>6.0-7.0	>6.0-7.0

RLA = Receptive Language Age, ELA = Expressive Language Age, M = Male, F = Female

It is observed from Table 18 to Table 25 children in the lower age group had acquired the skills early. RELT was not sufficient to provide language age for the typically developing children.

A list of questionnaire was prepared with the help of the data obtained from RELT, discourse analysis (using FACCT) and literature review. The questionnaire consisted of 135 and 144 questions respectively under receptive and expressive skills which were arranged according

to the order of acquisition seen in the children of three to seven years of age. This list was used for re-standardization.

4.2 Phase II: Re-standardization Phase

The raw scores obtained were subjected to quantitative analysis using SPSS 21.0 (Statistical Package for the Social Sciences) tool for the statistical analysis. The total score of each child was considered under both receptive and expressive skills for all the age groups. Descriptive statistics was performed for the total scores obtained during re-standardization phase under receptive and expressive domains. Table 26 and 27 shows the mean and standard deviation of the scores obtained during re-standardization phase for receptive skills and expressive skills respectively.

Table 26: *Mean and Standard deviation of the scores obtained during re-standardization phase for receptive skills.*

Age range	Gender	N	Mean	SD
3.0-3.6	M	15	12.633	1.922
	F	15	13.030	2.150
3.6-4.0	M	15	21.100	1.560
	F	15	21.030	1.652
4.0-4.6	M	15	29.960	1.575
	F	15	30.433	1.510
4.6-5.0	M	15	41.330	1.697
	F	15	41.300	1.461
5.0-5.6	M	15	51.560	1.387
	F	15	51.567	1.387
5.6-6.0	M	15	60.433	1.193
	F	15	60.400	1.088
6.0-6.6	M	15	70.200	1.399
	F	15	70.300	1.347
6.6-7.0	M	15	79.933	1.498
	F	15	79.900	1.154

N = number of participants, SD = Standard deviation, M = Male, F = Female

Table 27: *Mean and Standard deviation of the scores obtained during re-standardization phase for expressive skills.*

Age range	Gender	N	Mean	SD
3.0-3.6	M	15	8.300	0.861
	F	15	8.400	0.736
3.6-4.0	M	15	21.000	1.426
	F	15	20.967	1.260
4.0-4.6	M	15	28.733	1.150
	F	15	28.767	1.450
4.6-5.0	M	15	38.700	1.333
	F	15	38.667	1.219
5.0-5.6	M	15	49.900	1.312
	F	15	49.700	1.521
5.6-6.0	M	15	59.733	1.374
	F	15	60.233	1.193
6.0-6.6	M	15	70.167	1.566
	F	15	70.100	1.391
6.6-7.0	M	15	83.367	2.566
	F	15	83.167	2.304

N = number of participants, SD = Standard deviation, M = Male, F = Female

Wilks Lambda test was performed to check for the effect of age, gender and interaction of age and gender. As observed from the test there was significant effect of age [F (1,14) =845.2, p<0.001]. But there was no significant effect of gender or interaction effect of age and gender on the skills. Test of between subject effects with respect to receptive and expressive skills were examined. There was significant effect of age on receptive skills [F (1, 7) = 715.93, p <0.001] and expressive skills [F (1, 7) = 865.43, p <0.001].

Since there was significant effect of age over the linguistic skills Post Hoc Duncan test was performed to check for the age related trend with respect to linguistic skills. It was observed

that the groups significantly differed from each other with p< 0.05. Figure 5 shows representation of the effect of age on the scores of receptive and expressive skills.

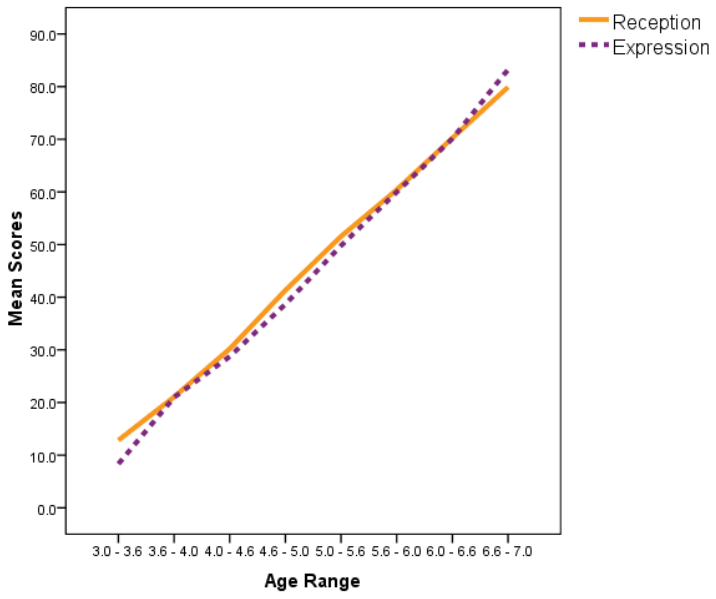

Figure 5: Graphical representation of the effect of age on the scores of receptive and expressive skills.

Followed by administration of questionnaire, 75% criterion was followed for considering particular skills to be achieved by the children in that particular age range. The questions for which 75% of the children were able to perform were selected for that particular age group under both receptive and expressive domains. Finally the questionnaire included 64 skills which included eight skills in each age group under both receptive and expressive domains.

4.2.1 Inter-judge reliability

The scale thus obtained was further given to three Speech-Language Pathologists to check for the inter-judge reliability rating for the order of acquisition and presence of skills in each age group. Speech-Language Pathologists rated each skills using three point rating scale

where '0' stands for not agree, '1' stands for partially agree and '2' stands for completely agree. The scores obtained were subjected to inter judge reliability measures using Cronbach's Alpha test. Table 28 to table 35 shows the results of the same for each age group, used both Receptive and expressive domain.

Table 28: *The co-efficient of reliability for the receptive and expressive skills in the age range of 3-.3.6 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.862	E1	0.944
R2	0.919	E2	0.797
R3	0.752	E3	0.950
R4	0.793	E4	0.920
R5	0.816	E5	0.713
R6	0.759	E6	0.944
R7	0.910	E7	0.816
R8	0.919	E8	0.944

R = Receptive skill, E= Expressive skill

Table 29: *The co-efficient of reliability for the receptive and expressive skills in the age range of 3.6-4.0 years*.

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.767	E1	0.862
R2	0.862	E2	0.919
R3	0.919	E3	0.752
R4	0.752	E4	0.793
R5	0.793	E5	0.816
R6	0.816	E6	0.759
R7	0.759	E7	0.910
R8	0.910	E8	0.919

R = Receptive skill, E= Expressive skill

Table 30: *The co-efficient of reliability for the receptive and expressive skills in the age range of 4.0-4.6 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.793	E1	0.767

R2	0.816	E2	0.862
R3	0.759	E3	0.919
R4	0.910	E4	0.752
R5	0.919	E5	0.793
R6	0.895	E6	0.816
R7	0.856	E7	0.759
R8	0.920	E8	0.910

R = Receptive skill, E= Expressive skill

Table 31: *The co-efficient of reliability for the receptive and expressive skills in the age range of 4.6-5.0 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.944	E1	0.778
R2	0.797	E2	0.944
R3	0.950	E3	0.797
R4	0.920	E4	0.950
R5	0.713	E5	0.920
R6	0.944	E6	0.797
R7	0.816	E7	0.797
R8	0.944	E8	0.797

R = Receptive skill, E= Expressive skill

Table 32: *The co-efficient of reliability for the receptive and expressive skills in the age range of 5.0-5.6 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.874	E1	0.902
R2	0.860	E2	0.778
R3	0.871	E3	0.944
R4	0.881	E4	0.797
R5	0.892	E5	0.950
R6	0.793	E6	0.920
R7	0.816	E7	0.713
R8	0.759	E8	0.944

R = Receptive skill, E= Expressive skill

Table 33: *The co-efficient of reliability for the receptive and expressive skills in the age range of 5.6-6.0 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.920	E1	0.952

R2	0.713	E2	0.796
R3	0.944	E3	0.971
R4	0.816	E4	0.714
R5	0.944	E5	0.947
R6	0.860	E6	0.950
R7	0.871	E7	0.920
R8	0.881	E8	0.713

R = Receptive skill, E= Expressive skill

Table 34

The co-efficient of reliability for the receptive and expressive skills in the age range of 6.0-6.6 years.

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.919	E1	0.856
R2	0.752	E2	0.767
R3	0.793	E3	0.862
R4	0.816	E4	0.919
R5	0.759	E5	0.752
R6	0.910	E6	0.793
R7	0.919	E7	0.816
R8	0.778	E8	0.759

R = Receptive skill, E= Expressive skill

Table 35: *The co-efficient of reliability for the receptive and expressive skills in the age range of 6.6-7.0 years.*

Receptive skill	**Cronbach's Alpha co-efficient**	**Expressive skill**	**Cronbach's Alpha co-efficient**
R1	0.719	E1	0.793
R2	0.911	E2	0.816
R3	0.877	E3	0.759
R4	0.902	E4	0.910
R5	0.778	E5	0.919
R6	0.944	E6	0.895
R7	0.797	E7	0.856
R8	0.950	E8	0.920

R = Receptive skill, E= Expressive skill

4.3 Phase III: Validation of the questionnaire.

Validation of the standardized questionnaire was carried out by administering the standardized questionnaire on 160 typically developing children and 48 clinical population

[children with hearing impairment (30) and children with mental retardation (18)]. The information was obtained from the parents regarding the linguistic skills of the children.

4.3.1 Administration of the standardized M-RELT.

After gathering the general information, 160 typically developing children in the age range of three to seven years including 20 children (10 males and 10 females) in each age group were considered for validation of the scale where the parents of the children participants were interviewed by administering the modified questionnaire. The questionnaire was administered to the parents of the participants where the responses were marked as "1" if the child has achieved the skills and "0" if the skill is not achieved. Based on the scoring, it was decided whether the receptive and expressive skills of the child fell in that particular age group.

4.3.2 Analysis with respect to the age group

Age group 1 (3.0-3.6 years)

Table 36 shows the mean and standard deviation for children in the age range of 3.0-3.6 years obtained by the quantitative analysis of the raw scores. The graphical representation of mean scores obtained in this age group is as shown in figure 6. On inspection the results showed there was no difference between males and females and they performed in par with each other.

Table 36: *Mean Standard deviation and 95% confidence level for the age group 3.0-3.6 years with respect to gender for two sections (Reception and Expression).*

Domains	**Gender**	**N**	**Mean**	**SD**	**95% confidence level for mean**	
					Lower Bound	**Upper bound**
Reception	Males	10	7.20	0.789	6.64	7.76
	Females	10	7.40	0.516	7.03	7.77
Expression	Males	10	7.10	0.738	6.57	7.63
	Females	10	7.30	0.823	6.71	7.89

N = number of participants, SD = standard deviation

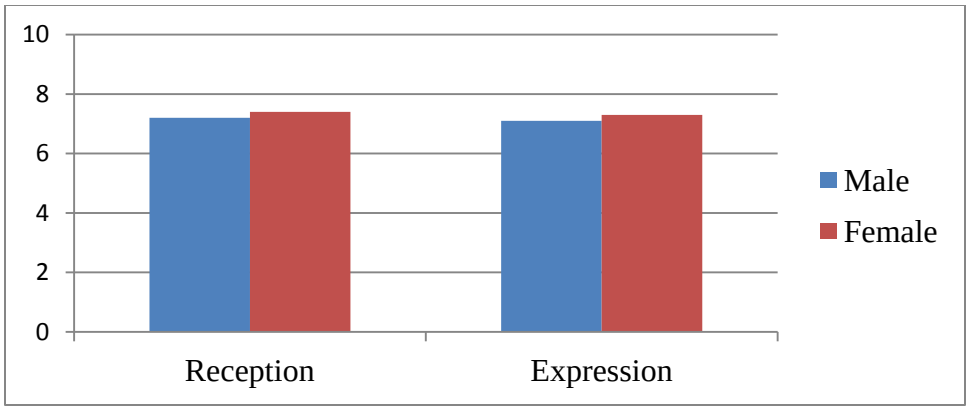

Figure 6: Graphical representation of mean scores obtained for children in the age range of 3.0 to 3.6 years.

It was observed in the present study that, children between 3.0 to 3.6 years were able to comprehend verbs and performed complex two to three step commands and gave two objects on request consistently. They were able to comprehend simple *'wh'*-questions including *'what'*, *'where'* and *'who'*. Comprehension of cause-effect relation, rhymes with actions was achieved by this age range. They were able to use deictic skills such as me, my, I, you etc and pronouns such as me, mine, my, he, she, it, they, them. They were able to express verbs in simple but complete sentences. Additionally they were able to add fillers to the listener's message (prolongation of vowel). The findings are in agreement with Brown, (1973), Villers and Villers, (1973), Cairns and Hsu (1978), Murthy (1981), Molyneaux, (1992), Shulman, (1994), Owens, (1996), Navitha (2009), and Levy and Polistok (2011).

Age group 2 (3.6 to 4.0 years).

The table 37 shows the mean and standard deviation for children in the age range 3.6-4.0 years which included 10 males and 10 females. The graphical representation of mean scores obtained in this age group is as shown in figure 7. The result showed that there was no difference between males and females under both receptive and expressive domains where both performed the same. The findings are similar to study done by Griffin & Norris (1967) but in contrast with

Navitha (2009) who stated wide differences between performance of boys and girls at this age group.

Table 37: *Mean, Standard deviation and 95% confidence level for the age group 3.6- 4.0 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.80	1.229	5.92	7.68
	Females	10	7.20	0.422	6.90	7.50
Expression	Males	10	7.20	0.789	6.64	7.76
	Females	10	7.10	0.738	6.57	7.63

N = number of participants, SD = standard deviation

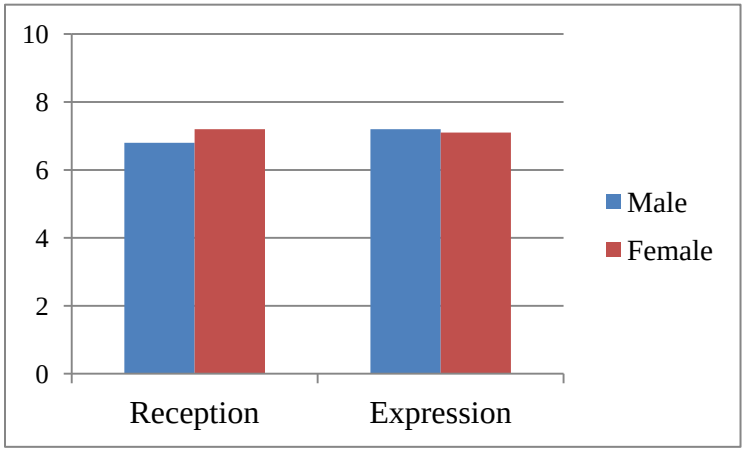

Figure 7: Graphical representation of mean scores obtained for children in the age range of 3.6 to 4.0 years.

It was observed that with the increase in age, there was increase in comprehension skills in children. Preschoolers master temporal words such as after, before, since and until (McLaughlin, 1998) which was also found in the present findings. Children in the age range of 3.6 to 4 years understood turn taking skills, time concepts (day. night, evenings), functions of objects, etc. They additionally comprehended simple stories and PNG markers. Children are able to comprehend cause-effect relationship during toddler stage but stabilizes during preschool years (Mclaughlin, 1998). In the current study the children were able to understand the cause and effect relationship during conversation from the listener's speech consistently. With respect to

expressive abilities, they used simple sentences in proper sentence structure, prepositions, complex pronouns, sing rhymes, use simple requests etc. The findings werein support with many other findings (Brown, 1973; Halliday, 1978; Rescorla, 1980p; Weiss, Gordan & Lillywhite, 1987; Gard, Gilman and Gorman, 1993; Capirci, Iverson, Pizzuto, & Volterra, 1996; Badwin and Biard, 1999; Fernald, Swingly and Pinto, 2001; Fisher, 2002; Volterra, Caselli, Capirci, Pizutto, 2005) but contrasted with McLaughlin (1998) who found inconsistent responses for turn taking skills.

Age group 3 (4.0-4.6 years).

The table 38 shows the mean and standard deviation for children in the age range of 4.0-4.6 years. The graphical representation of mean scores obtained in this age group is as shown in figure 8. The result showed that there was no makeable difference between males and females under both receptive and expressive domains. The findings were similar to study done by Griffin & Norris (1967) but contrasted Navitha (2009) who suggested that there was wide difference between performance of boys and girls.

Table 38: *Mean, Standard deviation and 95% confidence level for the age group 4.0- 4.6 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.60	1.075	5.83	7.37
	Females	10	6.70	1.059	5.94	7.46
Expression	Males	10	6.40	1.174	5.56	7.24
	Females	10	6.60	0.966	5.91	7.29

N = number of participants, SD = standard deviation

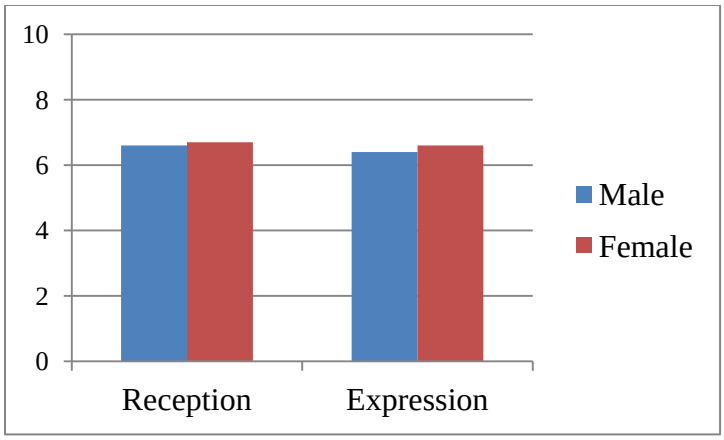

Figure 8: Graphical representation of mean scores obtained for children in the age range of 4.0 to 4.6 years.

In the current study it was found that children in the age range of 4 to 4.6 years were able to follow conversation, point a minimum of 8 lexical items in each category, comprehend adjectives, conjunctions, tense markers etc. The findings are in agreement with Prema, (1979), Murthy (1981), Sax and Weston (2007) and Navitha (2009).

By four years, 4.6 years, children were able to use words consisting of requests in conversation. They were able to comprehend adjective forms as. Meanwhile they were able to express in sentence level on their own consistently start expressing most of the grammatical concepts in their conversation. Children were able to express the primary colors consistently. They were able to understand PNG (Person Number Gender). Temporal words are acquired during preschool years where simple words such as here, after, now are acquired earlier followed by complex words such as since, until, while etc which are mastered by 5 years of age (McLaughlin, 1998). In the current study it was found that temporal words such as here, now, after and before were acquired by 4.0 to 4.6 years.

Age group 4 (4.6 to 5.0 years).

The table 39 shows the mean and standard deviation of reception and expression skills for children in the age range 4.6-5.0 years. The graphical representation of mean scores obtained in this age group is as shown in figure 9. The result showed that there was no difference in the performance between males and females under both receptive and expressive domains.

Table 39: *Mean, Standard deviation and 95% confidence level for the age group 4.6- 5.0 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.50	1.080	5.73	7.27
	Females	10	6.60	0.966	5.91	7.29
Expression	Males	10	6.70	1.160	5.87	7.53
	Females	10	6.70	0.823	6.11	7.29

N = number of participants, SD = standard deviation

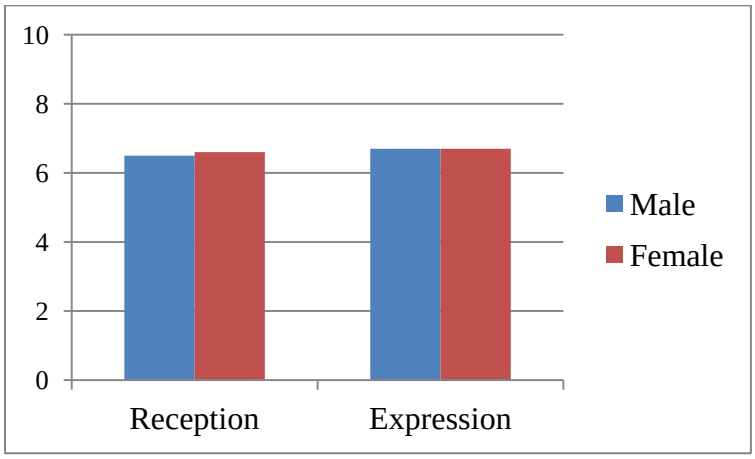

Figure 9: Graphical representation of mean scores obtained for children in the age range of 4.6 to 5.0 years.

As age increases, the children acquire more complex and higher skills under both receptive and expressive domains. In the current study, children in the age range 4.6 to 5.0 years were able to comprehend complex conjunctions (because, and, but) during conversation. Children were also able to comprehend conditional clauses such as *if* and *so* sentences during conversation by 5 years of age. They comprehend irregular pronouns in the age range of 4.6 to 5 years of age at conversation level consistently. They were able to categorize and differentiate them objects based on other properties including physical properties

Along with the receptive skills, expressive skills of the children also improve as the children grow older. Children start expressing socialized speech such as greeting, requests etc on their own. In the current study it was found that children in the age range 4.6 to 5.0 were able to express such monologic and socialized speech consistently without any assistance. They were

able to express their emotions and feelings verbally about their likes and dislikes on their own, use complex prepositions, opposites in sentences etc. The current findings are in support of the previous findings by Navitha (2009).

Age group 5 (5.0 – 5.6 years).

The table 40 depicts the mean and standard deviation for children in the age range of 5.0-5.6 years. The mean values show that there was no difference in the performance between males and females under both receptive and expressive domains. The graphical representation of mean scores obtained in this age group is as shown in figure 10.

Table 40: *Mean, Standard deviation and 95% confidence level for the age group 5.0- 5.6 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.70	1.160	5.87	7.53
	Females	10	6.50	0.972	5.80	7.20
Expression	Males	10	6.40	0.699	5.90	6.90
	Females	10	6.40	1.075	5.63	7.17

N = number of participants, SD = standard deviation

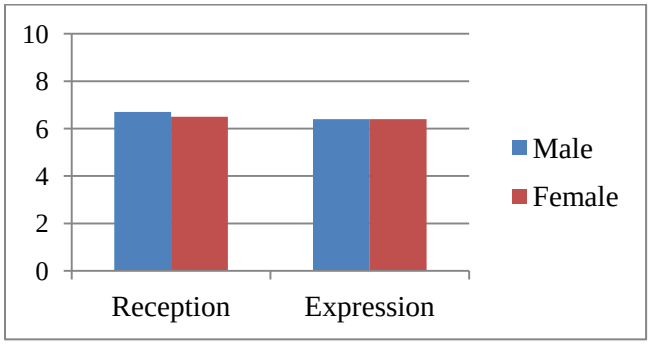

Figure 10: Graphical representation of mean scores obtained for children in the age range of 5.0 to 5.6 years.

After entering the school, children rapidly develop language skills by mastering most of the emerging skills. Children acquire syntagmatic and paradigmatic skills in the first few grades of school years (McLaughlin, 1998) which was observed in the present study. It was found that

children in the age range 5.0 to 5.6 years were able to understand wh-infinitive clauses (eg: I don't know where to put this) where wh-questions appear in between the sentences. Sax and Weston (2007) reported that children acquire wh-infinitive clauses between 48 to 60 months. children in the age range 5.0 to 5.6 years were able to comprehend superordinate and subordinate features of objects consistently by discriminating them as which was also found in Locke (1993). Further they understood the concepts of festivals as well.

As children grow, their curiosity increases and the way of questioning also improve. Studies reported that children acquire why, how and when questions in the beginning of the school years. Wallach (1984) reported that children acquire wh-question consistently by eight years of age. But in the current study they are acquired earlier. It was found that children in the age range 5.0 to 5.6 years were able to express all types of wh-questions including why, how and when questions during conversation consistently. They used superordinate and subordinate features, narrated events and procedures in sequence etc. Their mean length of utterances ranged from six to 8 words.

Age group 6 (5.6 to 6.0 years).

The table 41 depicts the mean and standard deviation for children in the age range 5.6-6.0 years. The graphical representation of mean scores obtained in this age group is as shown in figure 11. The result showed that there was no difference in the performance between males and females under both receptive and expressive domains. The findings were similar to the study done by Griffin & Norris (1967) but contrasted Navitha (2009) who reported that there was wide difference between performance of boys and girls.

Table 41: *Mean, Standard deviation and 95% confidence level for the age group 5.6- 5.0 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.80	0.789	6.24	7.36
	Females	10	6.60	0.843	6.00	7.20
Expression	Males	10	6.30	1.059	5.54	7.06
	Females	10	6.50	1.269	5.59	7.41

N = number of participants, SD = standard deviation

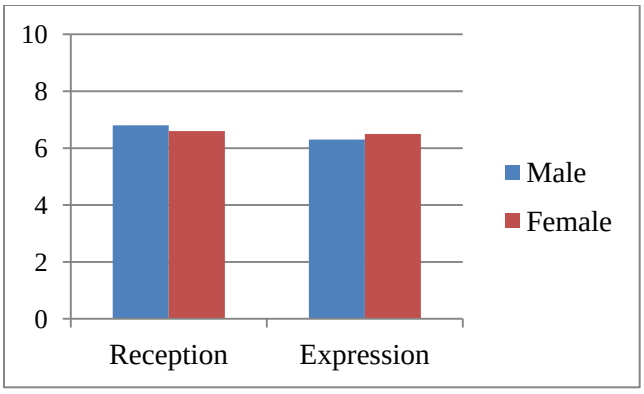

Figure 11: Graphical representation of mean scores obtained for children in the age range of 5.6 to 6.0 years.

By 5.6 to 6.0 years children stabilize most of the concepts learnt in the earlier stages along with learning new concepts. Studies reported that children start understanding degrees such as positive, comparative and superlatives during their preschool years and consistently in the school years (McLaughlin, 1998). Navitha (2009) reported that children in the age range of 4.6 to 5.0 years start comprehending degrees in simple sentences along with examples. In the current study it was found that though children in the younger age group acquired degrees, their responses were inconsistent, they were able to comprehend complex negatives consistently at sentence and conversation level, simple time and money concept without any assistance, recognize complex rhyming words from the rhymes and poems appeared in their text books.

It was found that children in the age range of 5.6 to 6.0 years were able to make conversational repairs on their own and also correct others by identifying their errors. By 5.6 years children were able to recognize 6-8 colours and shapes and express them on their own consistently. They were also able to express procedures in a sequence consistently, narrate stories or incidents in a paragraph on their own.

Age group 7 (6.0 to 6.6 years).

The table 42 depicts the mean and standard deviation for children in the age range of 6.0-6.6 years related to the performance between males and females under both receptive and expressive domains. The graphical representation of mean scores obtained in this age group is as shown in figure 12.

Table 42: *Mean, Standard deviation and 95% confidence level for the age group 6.0- 6.6 years according to gender for two sections (Reception and Expression).*

Domains	Gender	N	Mean	SD	95% confidence level for mean	
					Lower bound	Upper bound
Reception	Males	10	6.70	1.160	5.87	7.53
	Females	10	6.50	1.080	5.73	7.27
Expression	Males	10	6.30	1.252	5.40	7.20
	Females	10	6.10	0.876	5.47	6.73

N = number of participants, SD = standard deviation

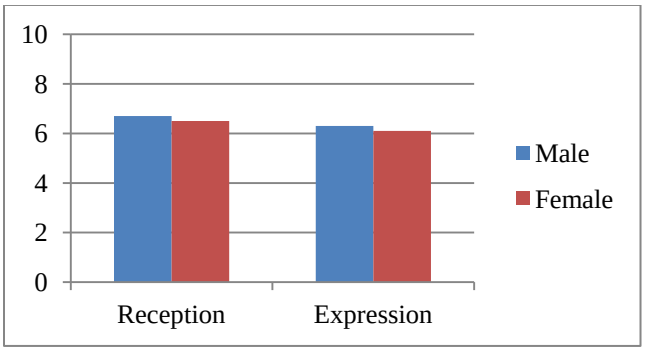

Figure 12: Graphical representation of mean scores obtained for children in the age range of 6.0 to 6.6 years.

By six years, children would have entered first grade. Children start learning finer aspects of language and most of the linguistic skills masters by school years. Literature supports the emergence of metalinguistic skills during school years (McLaughlin, 1998).

In the current study it was found that children above six years were able to perform more structured games which require higher cognitive skills. They were able to comprehend concept of weather and recognize different seasons such as rainy, summer and winter. They were able to comprehend complex adjectives such as clever, dull etc that masters during the school years, comprehend passive sentences consistently. As children start acquiring metalinguistic skills during school years, it was found in the current study that children above six years were able to comprehend figurative language i.e 'Metaphor' (Eg: he is running like a horse). It was also found that children between 6.0-6.6 years were able to comprehend complex emotions and feelings

such as situational jokes. The findings are in concurrent with James, (1990), Sax and Watson (2007) and Navitha (2009)

Children in this age group were able to express higher linguistic skills such as complex adjectives, complex negatives and adverbial conjunctions at sentence level that are already acquired. Additionally they were able to express simple and complex rhymes. As children start going to school, they start reciting poems, shlokas on their own as observed in the current study. As children grow, they start expressing in compound sentences along with paragraphs consistently. Along with all these linguistic concepts, children in the age range of 6.0 to 6.6 years were able to express days of the week, months of the year consistently on their own.

Age group 8 (6.6 to 7.0 years).

The table 43 depicts the mean and standard deviation for children in the age range of 6.6-7.0years related to the performance between males and females under both receptive and expressive domains The graphical representation of mean scores obtained in this age group is as shown in figure 13. The mean scores showed no difference between the genders.

Table 43: *Mean, Standard deviation and 95% confidence level for the age group 6.6- 7.0 years according to gender for two sections (Reception and Expression).*

Domains	**Gender**	**N**	**Mean**	**SD**	**95% confidence level for mean**	
					Lower bound	**Upper bound**
Reception	Males	10	6.50	1.269	5.59	7.41
	Females	10	6.40	0.843	5.80	7.00
Expression	Males	10	6.35	1.107	5.56	7.14
	Females	10	6.20	0.919	5.54	6.86

N = number of participants, SD = standard deviation

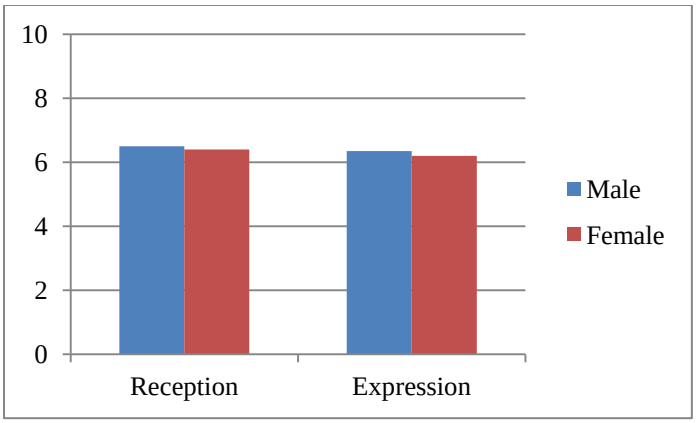

Figure 13: Graphical representation of mean scores obtained for children in the age range of 6.6 to 7.0 years.

Studies suggest that metalinguistic skills emerge during school years (McLaughlin, 1998; Turnbull & Justice, 2008). Idioms and proverbs are the metalinguistic skills that appear early in children. In the current study it was found that children in the age range of 6.6 to 7.0 years were able to understand idioms and proverbs. They were able to complete incomplete stories or incomplete explanations on their own. They were able to perform simple additions and subtractions on their own. They comprehended and recognized homonyms and were able to compare, contrast and discriminate things based on their properties, appearance and functions by seven years of age but are mastered in the later age.

As children start learning lessons and short paragraphs given in their text books during schools years, it was found that children were able to express simple definitions on their own by comprehending the concepts. They were able to express jokes, sarcasm, scary things on their own which require high cognitive skills.

Since there were no significant differences between the gender, the scores were combined and the range of scores for all the typical participants for overall 64 questions (under receptive and expressive domains separately) in the tool are presented in table 44.

Table 44: *Range of scores obtained from the modified tool for typically developing children.*

Age groups	Reception	Expression
3.0 – 3.6	5 - 8	6 - 8
3.6 – 4.0	13 - 16	11 - 16

4.0 – 4.6	21 - 24	21 - 24
4.6 – 5.0	29 - 32	29 - 32
5.0 – 5.6	37 - 40	37 - 40
5.6 – 6.0	45 - 48	45 - 48
6.0 – 6.6	53 - 56	53 - 56
6.6 – 7.0	61 - 64	61 - 64

4.3.3 Clinical Validation of M-RELT tool

The standardized questionnaire was administered on 48 clinical population (children with Hearing impairment and mental retardation). Table 45 shows the details of children with hearing impairment and table 46 shows the details of children with intellectual disability retardation included for validation phase. The questionnaire was administered to the parents of the participants where the responses were marked as “1” if the child has achieved the skills "0.5" for potentially achived and “0” if the skill is not achieved and arrived at the decision of the age range of each child. The obtained scores were subjected to statistical analysis using SPSS 21.0.

Table 45: *Details of children with hearing impairment*

Sl. no	Participant	Age (in years)	Gender	Diagnosis	RLA	ELA
1	HI 1	3.6	M	DSL-HL	3.0-3.6	<3.0-3.6
2	HI 2	4	M	DSL-HL	3.6-4.0	3.6-4.0
3	HI 3	4	F	DSL-HL	3.6-4.0	3.6-4.0
4	HI 4	4.4	F	DSL-HL	3.6-4.0	3.6-4.0
5	HI 5	4.9	F	DSL-HL	5.0-5.6	5.0-5.6
6	HI 6	5.4	M	DSL-HL	4.0-4.6	4.0-4.6
7	HI 7	5.6	F	DSL-HL	4.0-4.6	3.0-3.6
8	HI 8	5.6	F	DSL-HL	3.6-4.0	3.0-3.6
9	HI L9	6	F	DSL-HL	5.6-6.0	5.6-6.0
10	HI 10	6	M	DSL-HL	4.6-5.0	3.6-4.0
11	HI 11	6.6	M	DSL-HL	3.6-4.0	3.6-4.0
12	HI 12	6.2	M	DSL-HL	5.0-5.6	4.0-4.6
13	HI 13	6.5	F	DSL-HL	3.6-4.0	3.0-3.6
14	HI 14	7	M	ISL-HL	4.0-4.6	3.6-4.0
15	HI 15	7	M	ISL-HL	4.6-5.0	3.6-4.0
16	HI 16	7.6	M	DSL-HL	5.0-5.6	4.6-5.0
17	HI 17	8	M	ISL-HL	4.0-4.6	3.6-4.0
18	HI 18	8	F	DSL-HL	5.6-6.0	4.6-5.0
19	HI 19	8	M	ISL-HL	5.6-6.0	5.0-5.6
20	HI 20	8	M	ISL-HL	6.0-6.6	5.0-5.6
21	HI 21	8	M	ISL-HL	3.0-3.6	<3.0-3.6
22	HI 22	8	M	ISL-HL	>6.6-7.0	>6.6-7.0

23	HI 23	8.6	M	ISL-HL	6.0-6.6	4.6-5.0
24	HI 24	9	M	ISL-HL	4.0-4.6	3.6-4.0
25	HI 25	10	F	ISL-HL	4.0-4.6	3.6-4.0
26	HI 26	10	M	ISL-HL	4.6-5.0	3.6-4.0
27	HI 27	11	F	ISL-HL	4.6-5.0	4.0-4.6
28	HI 28	12	M	ISL-MA-HL	>6.6-7.0	6.6-7.0
29	HI 29	12	M	ISL-HL	>6.6-7.0	>6.6-7.0
30	HI 30	17	M	ISL-HL	6.6-7.0	6.6-7.0

HI = children with hearing impairment, M = male, F = Female, DSL-HL = delayed speech and language with hearing impairment, ISL-HL= = inadequate speech and language with hearing impairment, ISL-MA-HL= inadequate speech and language with misarticulation with hearing impairment.

Table 46: *Details of children with intellectual disability*

Sl.no	Participant	Age (in years)	Gender	Diagnosis	RLA	ELA
1	MR1	5	M	DSL-MR	3.6-4.0	3.0-3.6
2	MR2	5.5	M	DSL-MR	4.0-4.6	3.6-4.0
3	MR3	6	F	DSL-MR	4.0-4.6	3.0-3.6
4	MR4	6.4	F	DSL-MR	4.6-5.0	3.6-4.0
5	MR5	7	M	DSL-MR	3.0-3.6	<3.0-3.6
6	MR6	8	F	ISL-MR	6.0-6.6	6.0-6.6
7	MR7	8	M	ISL-MR	6.0-6.6	6.0-6.6
8	MR8	8	M	ISL-MR	5.0-5.6	4.0-4.6
9	MR9	10	M	ISL-MR	3.6-4.0	3.0-3.6
10	MR10	10	F	ISL-MR	4.0-4.6	4.0-4.6
11	MR11	10	M	ISL-MR	3.6-4.0	3.0-3.6
12	MR12	10.9	M	ISL-MR	4.6-5.0	3.6-4.0
13	MR13	10	F	ISL-MR	5.6-6.0	4.6-5.0
14	MR14	12	M	ISL-MR	6.6-7.0	6.0-6.6
15	MR15	13	M	ISL-MR	6.0-6.6	5.6-6.0
16	MR16	13	M	DSL-MR	6.0-6.6	5.6-6.0
17	MR17	14	F	ISL-MR	5.0-5.6	4.6-5.0
18	MR18	16	M	ISL-MR	3.6-4.0	<3.0-3.6

MR = children with mental retardation, M = male, F = Female, DSL-MR= delayed speech and language with mental retardation, ISL-MR = inadequate speech and language with mental retardation.

The discrepancies of the result obtained between children with HI may be accounted for differences in the severity of hearing impairment.

Initially, one-sample Kolmogorov-Smirnov was done to check the normal distribution of the data for all the three groups. The results revealed that the three groups were not normally distributed at $p< 0.05$. As there was no normal distribution observed in the data, a non-parametric Kruskal-Wallis H-test was done to check the significant difference across three groups and the

results revealed that there was significant difference between the normal and clinical group under both reception (χ^2= 77.08, p< 0.001) and expression (χ^2= 83.41, p< 0.001) skills.

Mann-Whitney U-test was done to compare the performance between all three groups. The results revealed that there was significant difference between typical children and children with hearing impairment under both reception (|Z|= 6. 40, p< 0.05) and expression (|Z|= 6.95, p< 0.05) where normal children performed better than the children with mental retardation under both the domains which is in consonance with the previous studies (Cole, Oshima-Takane & Yaremko, 1994; Szagun, 2002; McGuckian & Henry, 2007; Kunisue et.al, 2007; Soares, Goulart & Chiari, 2010; Fitzpatrick, Crawford & Durieux-Smith, 2011; Zarifian, Mohamadi & Mahmoudi, 2012).

It was also found that there was significant difference seen between typical children and children with intellectual disability in both reception (|Z|= 6. 82, p<0.05) and expression (|Z|= 6. 83, p<0.005) where normal children were able to perform better than the children with hearing intellectual disability (Sigman, Marian & Ungerer, 1984).

There was no significant difference seen when children with intellectual disability and children with hearing impairment were compared as both performed poorly in both reception (|Z|= 1.492, p>0.05) and expression (|Z|= 0.879, p>0.05) skills compared to typical children.

Table 47: *Results of Spearman's correlation coefficients between reception, expression and age groups*

		Age group	**Reception**	**Expression**
Age group	Correlation coefficient	1.000	-.216	-.324
	Sig. (2-tailed)	-	0.006	0.000
	N	160	160	160
Reception	Correlation coefficient	-.216	1.000	0.58
	Sig. (2-tailed)	0.006	-	0.464
	N	160	160	160
Expression	Correlation coefficient	-.324	0.058	1.000
	Sig. (2-tailed)	0.000	0.464	-
	N	160	160	160

N = Number of participants

Pearson's correlation coefficient was performed to check the correlation between two domains within each age group and overall and it was found that it was not significant at $p>0.05$. Further, Spearman's Rank correlation was performed to check the significant correlation between age groups, and domains (Reception and expression). Table 47 shows the results of the same. The results revealed that there was a negative correlation between age groups and the two domains (reception and expression). This suggests that as age increased, the performance of the children decreased due to the increased difficulty level of the linguistic skills under both receptive and expressive domains in the modified questionnaire.

CHAPTER IV
SUMMARY AND CONCLUSION

Language acquisition is a continuous process that starts early in human life. The development begins with the ability to understand the things around and express the same using words, phrases and sentences to communicate. These capacities develop in stages from infancy. Language development is a crucial component in children which varies with age, gender, culture, health condition, family influences etc. The age range between three to seven years is an important period where children develop language outside home environment such as school, interaction with peer groups, improved observation abilities about the things around them etc. This development may be hampered in children with hearing impairment, intellectual disability, cerebral palsy, autism, etc. Therefore it is important to assess delay in language in such children which would help in remediating them.

There are various test batteries available to assess the linguistic skills in children but they may be time consuming since it serves the purpose of detailed diagnostic evaluation. Therefore screening scales are routinely used in assessing linguistic skills of children as they are time saving.

The present study focused on understanding the development of linguistic skills of typical developing children in the age range of three to seven years. A routinely used screening tool, Receptive Expressive Language Test was modified and re-standardized based on the linguistic abilities of the children.

A total of 480 Kannada speaking typically developing children in the age range of 3.0 to 7.0 years of age were included in the study. A total of 48 children with hearing impairment and intellectual disability were considered for validation of the screening tool. The typically developing children were grouped into eight age groups consisting of 3.0-3.6, 3.6-4.0, 4.0-4.6, 4.6-5.0, 5.0-5.6, 5.6-6.0, 6.0-6.6 and 6.6-7.0 years of age. The pilot study was done on 80 children which focused on developing a questionnaire which

included list of skills according to the order of acquisition under receptive and expressive language domains in the age range of three to seven years. The scale was re-standardized on 240 typically developing children where the developed questionnaire was administered to the children in the presence of their parents/ care takers. After re-standardization, the questionnaire was modified according to the information obtained from the children along with ratings done by three Speech Language Pathologists. The modified questionnaire was validated by administering on another set of 160 typically developing children in the age range of three to seven years. And the same was administered on 48 clinical population including children with hearing impairment and children with intellectual disability.

The raw scores obtained under both receptive and expressive language skills for all the age groups were subjected to quantitative analysis using Statistical Package for the Social Sciences (SPSS, 16.0 version) tool. Descriptive statistics was done to calculate the mean and standard deviation for the total scores of the children in particular age groups (males and females separately). Mann Whitney (non-parametric) test was done to compare the performance between typically developing children and clinical population (children with Mental Retardation and children with Hearing Impaired). Kolmogorov-Smirnov was done to check the normal distribution of the data for all the three groups (typical children, children with Mental Retardation and children with Hearing Impaired). Spearman's correlation was done to see the correlation between two domains (comprehension and expression) within the age groups. Pearson's correlation coefficient was done to check the correlation between comprehension and expression across age groups.

The results were discussed under each age group in terms of receptive and expressive language. There was a developmental trend seen in the performance of the children in both the domains with the advance in age.

Thus the following conclusions were made from the present study:

- As the age increased the complexity of the receptive and expressive language skills increased.
- Children in the age range of three to three and half years were able to comprehend and express 'wh' questions, dietic forms, 2-3 step commands and match primary colours.
- By the age of four years children had acquired concept of time, temporal aspects, prepositions, tense forms and PNG markers.
- At four and half years they achieved conjunctions, requesting skills. They were able to attend conversation successfully.
- By the age of five years children were able to categorize lexical items, comprehend complex conjunctions, irregular pronouns and complex stories. They were able to express short stories, use complex sentences, opposites, complex prepositions etc.
- By the age of six years children were able to understand syntagmatic and paradigmatic relations, rhyming words, infinitive clauses. They were able to use rhyming words, 6-8 colours and geometric shapes, infinitive clauses etc.
- Finally by the age of seven years children understood situational jokes, complex adjectives, ascending and descending orders, judge appropriateness, idioms and proverbs. They expressed complex negatives, compound sentences, compared and contrasted complex pictures, measuring skills, money concept and figurative language.
- It was observed from the study that the performance of the children decreased due to increase in the difficulty level of the skills.
- There was no difference in the performance between males and females across all the age groups.
- The receptive skills preceded the expressive skills across the age groups as observed.
- Clinical population including children with intellectual disability and hearing impairment performed poorer compared to typically developing children.

Children included in the present study were faster in acquiring linguistic skills as compared to the developmental norms provided in the older version of the RELT screening tool. The improvement can be attributed to the increase in the amount of stimulation, physiological and psychological maturational aspects, environmental factors, bi/multilingual exposure etc.

5.1 Implications of the study

This scale helps in understanding the developmental trend with respect to receptive and expressive language skills in children between the age range of three to seven years. The scale can be used routinely in the clinical setting for screening and comparing linguistic skills in typically developing children as well as clinical population. The screening tool can be utilized for the therapeutic purpose there by monitoring the progress of therapeutic intervention.

5.2 Limitations of the study

- The study is restricted to children in the age range between three to seven years.
- The study included only Kannada speaking children. The scale may be administered on children speaking other languages, as it is strictly not a language specific test.
- Validation of the study was done only on children with intellectual disability and hearing impairment and other clinical population was not considered.

5.3 Future directions

- The scale can be validated on other clinical population such as autism, specific language impairment, learning disability, slow learners etc.
- The study can be extended to older age groups as acquisition of linguistic skills continue till adulthood.

REFERENCES

Ammons, R. B., & Ammons, H. S. (1958). *Full range picture vocabulary test*. Missoula, Montana: Psychological Test Specialists.

Ann Locke (2002) Catching up or falling behind? Literacy Today, September 2002, no. 32.

Anuroopa, L., & Shyamala, K.C. (2006). *Development of cognitive linguistic assessment protocol for children*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Apel, K., & Masterson, J. J. (2001b). Theory-guided spelling assessment and intervention: A case study. *Language, Speech and Hearing Services in Schools, 32, 182-195*.

Apel, K., & Thomas-Tate, S. (2009). Morphological awareness skills of fourth grade African American students. *Language, Speech and Hearing Services in Schools, 40, 312-324*.

Austin, J. L. (1962). *How to do things with words*. London : Oxford University Press, p.1.

Baldwin, D. A., & Baird, J. A. (1999). Action analysis: A gateway to intentional inference. In P. Rochat (Ed), *Early social cognition*: Understanding others in the first months life (pp. 215-240), NJ:Erlbaum.

Bickerton, D. (1995). Language and Human behaviour. London: University College London Press.

Bishop (1989). In Suhasini, G. (1997*). Linguistic Profile Test (LPT) (Telugu). Normative Dta for children in Grade I to X*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Bloom, L. (2000). The intentionality model of word learning: how to learn a word, any word. In R. M. Golinkoff, K. Hirsh-Pasek, N. Akhtar, L. Bloom, G. Hollich, L. Smith, et.al. (Eds), *Becoming a word learner:A debate on lexicon acquisition* (pp. 19-50). New York: Oxford University Press.

Bowen, C. (1998). Brown's Stages of Syntactic and Morphological Development. Retrieved from www.speech-language-therapy.com/index.php?option=com_content&view=article&id=33

Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harward University Press.

Bruner, J. (1983). *Child's Talk: Learning to Use Language*, New York:Norton.

Bzoch, K., & League, R. (1970). *The receptive and expressive emergent language scale*. Baltimore: University Park Press.

Cairns, H. S., & Hsu, J. R. (1978). Who, why, when, and how: a development study. Journal of Child Language, 5(03), 477-488.

Capirci, O., Iverson, J. M., Pizzuto, E., & Volterra, V. (1996). Communicative gestures during the transition to two-word speech. *Journal of Child Language, 23, 645-673*.

Carrow, E. (1974). *Carrow elicited language inventory*. Austin, Texas: Learning Concepts.

Carrow, M. A. (1968). The development of auditory comprehension of language structure in children. *Journal of Speech and Hearing Disorders, 39, 99-111*.

Chomsky, C. (1971) Write first, read later. Childhood Education 47, 296-300.

Chomsky, N. (1995). *Language and nature*. Mind, 104, 1-61.

Clark (1980). Language development in children. In Owens, R. (2005). *Language development: an introduction*, 7th Ed., Meril Publication Co.

Clark, E. V., & Sengul, C. J. (1978). Strategies in the acquisition of deixis. *Journal of child lanaguge,5, 457-475*.

Cole, E. B., Oshima-Takane, Y., & Yaremko, R. L. (1994). Case studies of pronoun development in two hearing-impaired children: normal, delayed or deviant?. *International Journal of Language & Communication Disorders*, *29*(2), 113-129.

Cox & Richardson, (1985). In Owens, R. (2005). *Language development: An introduction*, 7th Ed., Meril Publication Co.

Crystal, D. (1995). *The Cambridge encyclopedia of the English language*. Cambridge: Cambridge University Press.

de Villiers, J.G., & de Villiers, P. A. (1973). A cross-sectional study of the acquisition of grammatical morphemes in child speech. *Journal of Psycholinguistic research,2, 267-278*.

Dunn, L. M. (1965). *Peabody picture vocabulary test*. Circle pines. Minnesota: American Guidance Service. Revised in 1981

Fagan, M. K. (2009). Mean length of utterance before words and grammar: Longitudinal trends and developmental implications of infant vocalizations. *Journal of child Language, 36, 495-527*.

Fernald, A., Swingley, D., & Pinto, J. P. (2001). When half a word in enough: Infants can recognize spoken words using partial phonetic information. *Child Development, 72, 1003-1015*.

Fisher, C. (2002). Structural limits on verb mapping: The role of abstract structure in 2.5-year-olds' interpretations of novel verbs. *Developmental science, 5, 55-64*.

Fitzpatrick, E. M., Crawford, L., Ni, A., & Durieux-Smith, A. (2011). A descriptive analysis of language and speech skills in 4-to 5-yr-old children with hearing loss. *Ear and hearing*, *32*(5), 605-616.

Foster, R., Giddan, J. J., & Stark, J. (1972). *Manual for the assessment of children's language comprehension*. Palo Alto: Consulting Psychologists Press.

Frankenberg, W. K., Dodds, J. B., & Fundal, A. W. (1970). *Denver developmental screening test materials*. Denver: University of Colarado Medical Centre.

Gard, A., Gilman, L., & Gorman, J. (1993). *Speech and language development chart*. Austin, TX:PRO-ED.

Geetha. H. (1986). *Three Dimensional Language Acquisition Test*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Gelman, S. A., & Raman, L. (2007). This cat has nine lives? Children's memory for genericity in language. *Developmental Psychology, 43, 1256-1268*.

Gibbs, R. (1987). Linguistic factors in children's understanding of idioms. *Journal of Child Language, 14, 569-586*.

Glenwright, M., & Pexman, P. M. (2010). Development of children's ability to distinguish sarcasm and verbal irony. *Journal of Child Language, 37, 429-451*.

Gopnik, M. (1997). *The inheritance and innateness of grammar*. Vancouver studies in cognitive science 6. Oxford University Press.

Graham, S. A., & Kilbreath, C. S. (2007). It's a sign of the kind: Gestures and words guide infant's inductive inferences. *Developmental Psychology, 43, 1111-1123*.

Griffin & Norris (1967), Language assessment in children. In Navitha, U. (2009). *Comprehensive Language assessment tool for children*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Griffin, A. & Meltzoff, A. (1997). Words, thoughts and Theories. Cambridge, MA: MIT Press. Guildford, J., & Hoepfner, R. (1971). *The analysis of intelligence*. New York:McGraw-Hill.

Guildford, J., & Hoepfner, R. (1971). *The analysis of intelligence*. New York:McGraw-Hill.

Halliday, M. A. K. (1978). *Language as a social semiotic: The social interpretation of language and meaning*. Baltimore: University Park Press.

Hammil & Newcommer (1997). Test of Language Development (TOLD). *Wikipedia*

James, S. L. (1990). *Normal language acquisition*. Boston, MA: Allyn & Bacon

Kathyayini, H.N. (1984). *Language Test in Kannada for expression in children*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Kirk, S. A., & McCarthy, S. S. (1961). The Illionos test of Psycholinguistic abilities-An approach to differential diagnosis. *Journal of Mental Deficiency, 66 (3), 399-412*.

Kunisue, T., Takayanagi, N., Isobe, T., Takahashi, S., Nose, M., Yamada, T., ... & Tanabe, S. (2007). Polybrominated diphenyl ethers and persistent organochlorines in Japanese human adipose tissues. *Environment international*, *33*(8), 1048-1056.

Labov, W. (1972). *Language in the inner city: Studies in the Black English Vernacular*. Philadelphia: University of Pennsylvania Press.

Lahey, M. (1988). *Language disorders and language development*. New York:Macmillan.

Lane, V. W., & Molyneaux, D. (1992). The dynamics of communicative development. Prentice Hall.

Leonard, L., Miller, C., & Gerber, E. (1999). Grammatical morphology and the lexicon in children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 42, 678-689*.

Lera, L. (1958). Assessing language development. *Journal of Speech and Hearing Research, 1 (1), 75-85*.

Levey, S., & Polirstok, S. (Eds.). (2010). *Language development: Understanding language diversity in the classroom*. SAGE. Publications.

Locke, J.L. (1993). *The child's path to spoken language*. Cambridge: Harvard University Press.

MacWhinney, B. (1987). The competition Model. In B. MacWhinney (Ed.), *Mechanisms of Language acquisition* (pp. 249-308). Hillsdale, NJ:Lawrence Erlbaum.

McGuckian, M., & Henry, A. (2007). The grammatical morpheme deficit in moderate hearing impairment. *International journal of language & communication disorders, 42*(S1), 17-36.

McLaughlin, B. (1981). Differences and similarities between first- and second-language learning. Native Language and Foreign Language Acquisition, 379, 23-32.

McLaughlin, S. (1998). *Introduction to language development*. San Diego, CA: Singular Publishing Group, Inc.

Mehler, J., Bertoncini, J., & Barriere, M. (1978). Infant recognition of mothre's voice. *Perception, 7*, 491-497.

Miller, P., & Sperry, L. (1988). Early talk about the past: The origins of conversational stories of personal experience. *Journal of Child Language, 15, 293-315*.

Murthy, S. (1981). *A Syntax Screening Test in Tamil*. Unpublished Master's Dissertation, University of Mysore, Mysore.

Nathani, S., Ertmer, D. J., & Stark, R. E. (2006). Assessing vocal development in infants and Toddlers. *Clinical Linguistics and Phonetics, 20, 351-369.*

Navitha, U., & Shyamala, K. C. (2009). *Comprehensive Language assessment tool for children*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Nelson, K. (1973). Structure and strategy in learning to talk. *Monographs of the society of research in child development, 38 (1-2), 1-135*.

Nicolosi L, Harryman E, Kresheck J. (1996). *Terminology of communication disorders: speech-language-hearing*, 4th ed. Baltimore: Willian & Willkins,337-340.

Nippold, M. A. (1998). *Later language development: The school-age and adolescent years* (2nd ed). Austin, Tx:PRO-ED.

Osgood, C. E. (1957). *Contemporary approaches to cognition: A behavioristic analysis*. Cambridge, Harward University Press.

Owens, R. (2005). *Language development: An Introduction,* 6th Ed., Meril publication Co.

Owens, R. (2008). *Language development: An Introduction* (7th Ed.). Boston: Pearson/Allyn & Bacon.

Owens, R. E. (1996*). Language development: An introduction* (4th ed.). Boston, MA: Allyn & Bacon.

Owens, R. E. (1996). *Language development: An Introduction*, 4th Ed., New York: Allyn & Bacon.

Owens, R. E. (1996). *Language development: An Introduction*, 4th Ed., New York: Allyn & Bacon.

Payne, E. (2013). Babies begin learning language from their mothers while they're still in the womb. Retrieved from *http://www.dailymail.co.uk/health/article-2256036/Babies-begin-learning-language-mothers-theyre-womb.html.*

Pease, D. M., Gleason, J. B., & Pan, B. A. (1989). Gaining meaning: Semantic development. In J. B. Gleason (Ed.), *The Development of language*. Columbus, OH:Merrill.

Piaget, J. (1971). *Biology and Knowledge: An essay on the relations between organic regulations and cognitive processes*. Chicago: University of Chicago Press.

Prema, K.S. (1979). *Some aspects of Syntax of 5-6 year old children: A Descriptive study in Kannada*. Unpublished Mater's Dissertation, University of Mysore, Mysore, India.

Priya, K. S. (1994). *Test of Pragmatics. Unpublished Master's Dissertation, University of Mysore*, Mysore, India.

Quigley, S.P., Steinkamp, M.W., Power, D.J., & Jomen, B.W. (1978). *Test of Syntactic abilities - A guide to administration and interpretation*. Dormac, Inc., Beaverton, Oregon, USA.

Rescorla, L. (1980). Overextension in early language development. *Journal of Child Language, 7, 321-335*.

Roopa, N. (1980). *Some aspects of syntax in 4-5 year old children: A descriptive study in Hindi*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Rukmini, A. P. (1994). *Malayalam Language Test*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Sax, N., & Weston, E. (2007). Language development milestones. *Retrieved July*, *19*, 2013.

Shulman, B.B. (1994). Child Development. In W. O. Haynes & B.B. Shulman (Eds), *Communication development: Foundations, processes and clinical applications* (pp. 63-81). Englewood Cliffs, NJ:Prentice-Hall.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational researcher*, 4-14.

Shyamala, K.C. (2003). *Kannada Language Test*. Project under AIISH Research Fund (ARF). Mysore, India.

Sigman, M., & Ungerer, J. A. (1984). Cognitive and language skills in autistic, mentally retarded, and normal children. *Developmental Psychology*, *20*(2), 293.

Skinner, B.F. (1957). *Verbal Behavior*, Englewood, Cliffs, N.J: Prentice Hall.

Soares, A. D., Goulart, B. N. G. D., & Chiari, B. M. (2010). Narrative competence among hearing-impaired and normal-hearing children: analytical cross-sectional study. *Sao Paulo Medical Journal*, *128*(5), 284-288.

Sreedevi, S. V. (1976). *The aspects of acquisition of Kannada by 2+ year old children*. Unpublished Master's dissertation, University of Mysore, Mysore, India.

Staats, A. W. (1971a). Linguistic-mentalistic theory an explanatory S-R learning theory of language development. In D. I. Slobin (Ed). *The ontogenesis of grammar* (pp. 104-150). New York: Academic Press.

Sudha, K. M. (1981). *A Syntax Screening Test in Tamil*. Unpublished Master's Dissertation, University of Mysore, Mysore, India.

Szagun, G. (2002). Learning the h (e) ard way: The acquisition of grammar in young German-speaking children with cochlear implants and with normal hearing. *Investigations in clinical phonetics and linguistics*, 131-144.

Tomasello, M. (2003). *Constructing a Language*. Hardvard University Press: Cambridge.

Turnbull, K. L. P., & Justice, L. M. (2011). *Language development from theory to practice*. Pearson Higher Ed.

Ukrainetz, T. A., Justice, L. M., Kadervek, J. N., Einsenberg, S. L., Gillam, R. B., & Harm, H.M. (2005). The development of expressive elaboration in fictional narratives. *Journal of speech, Language, and Hearing Research, 48, 1363-1377*.

Vasilyeva, M., Waterfall, H., & Huttenlocher, J. (2008). Emergence of Syntax: Commonalities and differences across children. *Developmental Science, 11, 84-97*.

Venkatesan, S. (1991). In Venkatesan, S. (2004). *Children with developmental disabilities: A training guide for parents, teachers and caregivers*. India: Sage Publication.

Vijayalakshmi, A. R. (1981). *Development of a test in Kannada in assessing Language acquisition in children*, Unpublished doctoral thesis, University of Mysore, Mysore, India.

Volterra, V., Caselli, M. C., Capirci, O., & Pizutto, E. (2005). *Gesture and the emergence and development of language*. In Tomasello, M., & Slobin, D. I. (Eds), *Beyond nature-nurture: Essays in honor of Elizabeth Bates* (pp.3-40). Mahwah, NJ: Erlbaum.

Vygotsky, L. (1978). *Mind in society. The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wallach, G. P. (1984). Later language learning: Syntactic structure and strategies. In G. P. Wallach & K. G. Butler (Eds;), *Language learning disabilities in school-age children* (pp. 82-102). Baltimore: Willian & Willkins

Waxman, S. R., & Teresa Guasti, M. (2009). Nouns, adjectives, and the acquisition of meaning: new evidence from Italian-acquiring children. Language Learning and Development, 5(1), 50-68.

Weiss, C. E., Gordan, M. E., & Lillywhite, H. S. (1987). *Clinical management of articulatory and phonologic disorders (2nd ed.)*. Baltimore:Williams & Wilkins.

Wells, G. (1985). *Language development in the preschool years*. New York: Cambridge University Press.

Westby, C. (1990). Ethnographic interviewing: asking the right questions to the right people in the right ways. *Journal of Childhood Communication Disorders, 13, 101-111*.

Westby, C. E. (1998). Communicative refinement in school age and adolescence. In W. O. Haynes & B. B. Shulman (Eds.), *Communication development: Foundations, processes, and clinical implications* (pp. 311-360). Baltimore:Williams & Wilkins.

Zarifian, T., Mohamadi, R., & Mahmoudi, B.B.(2012). Syntactical Skills of Persian Hearing Impaired and typically normal children: A Comparative Research. Journal of Research in Rehabilitation Sciences. Retrieved from www.fdhkids.com/developmental_milestones/time_and_sequencing.html.

APPENDIX A

List of questionnaire prepared during the pilot study for receptive skills

Sl.No	QUESTIONS
1.	Comprehends cause-effect relationship
2.	Comprehends complex commands and gives 2 objects on request.
3.	Able to comprehend partner's intonation, eye contact, gaze and body language.
4.	Matches primary colors.
5.	Associates word with referent.
6.	Comprehends dimensions (big/little, high/low).
7.	Comprehends temporal words (after, before, since)
8.	Comprehends grammatical morphemes ('ing', 's', 'ed')
9.	Comprehends continuous verbs ('ing')
10.	Comprehends simple past tense.
11.	Comprehends linking verbs (am, is , are, was)
12.	Comprehends positive, comparative and superlative degree (bigger, biggest).
13.	Comprehends negatives (no, don't etc).
14.	comprehends wh-quest (what, where, who)
15.	Comprehends short stories.
16.	Comprehends object usage in sentences. (spoon is used to eat food)
17.	Recognize alphabets.
18.	Recognition of own name in print.
19.	Exhibits curiosity and comprehends problem solving.
20.	Comprehends categorization.
21.	Co-operative play.
22.	Comprehends turn taking.
23.	Code-switching.

24.	Comprehends longer utterances.
25.	Comprehends additives (and).
26.	Comprehends causal words (because).
27.	Comprehends contrastive (but).
28.	Comprehends what – if questions.
29.	Comprehends complex and compound sentences.
30.	Comprehends reflexive pronouns (myself, herself).
31.	Comprehends articles (the, a).
32.	Comprehends deitic skills (me/my, I/u etc).
33.	Comprehends adjectives (ugly, beautiful etc)
34.	Comprehends syntagmatic relations.
35.	Comprehends paradigmatic relations.
36.	Comprehends spatial words (In, on)
37.	Comprehends all prepositions in sentences.
38.	Comprehends kinship words (family members).
39.	Comprehends third person present tense singular.
40.	Comprehends complex negatives (would not).
41.	Comprehends ‘how’ questions.
42.	Comprehends figurative language (metaphor).
43.	Comprehends prepositional clauses.
44.	Comprehends 6-8 colors and shapes.
45.	Comprehends 2-3 unrelated commands.
46.	Comprehends jokes, shocks.
47.	Comprehends complex conjunctions (when, so, if).
48.	Comprehends meaning of new words
49.	Comprehends wh-infinitive clauses (I don’t know where to put this).

50.	Comprehends if and so sentences.
51.	Comprehends irregular pronouns.
52.	Comprehends passive sentences.
53.	Comprehends word definition.
54.	Comprehends abstraction.
55.	Comprehends subordinate and super ordinate features.
56.	Able to judge appropriateness.
57.	Comprehends multiple word meanings.
58.	Comprehends simple segmentation.
59.	Comprehends idiomatic expression.
60.	Comprehends homonyms.
61.	Relates letters to sounds (phoneme-grapheme correspondence).
62.	Idea about strings of letters.
63.	Comprehends problem solving.
64.	Comprehends divergent and convergent semantic production.
65.	Emerging metalinguistic skills.
66.	Comprehends segmentation of complex words.
67.	Comprehends ambiguous sentences.
68.	Comprehends all wh-questions at conversational level.
69.	Comprehends idioms and proverbs.
70.	Comprehends phonological ambiguity.
71.	Comprehends adverbial conjunctions (therefore, whoever).
72.	Comprehends concept of different tastes.
73.	Comprehends concepts like rate, pitch and volume in their own and also listener’speech.
74.	Comprehension of emotions in listener’s speech.
75.	Comprehends numbers till 100.

76.	Matches word to picture and word-word.
77.	Matches animal with their younger ones.
78.	Comprehends simple stories and answers questions related to it.
79.	Comprehends riddles.
80.	Comprehends professionals.
81.	Comprehends simple time concepts (day, night, noon, evng).
82.	Comprehends compare and contrast of complex pictures.
83.	Comprehends simple additions and subtractions.
84.	Comprehends money and time concept.
85.	Comprehends similarities and differences.s
86.	Comprehends measuring skills.
87.	Able to arrange simple jumbled words.
88.	Comprehends action verbs in sentences.
89.	Comprehends phonemic cues in guessing a word.
90.	Comprehends basic sound-word association.
91.	Comprehends complex words and make simple words out of it.
92.	Comprehends tenses in conversational level.
93.	Comprehends 7-8 items in each lexical category.
94.	Comprehends concepts of short and long vowels.
95.	Comprehends irregular words (talk).
96.	Comprehends complex jokes.
97.	Comprehends paragraphs.
98.	Comprehends prepositions in conversation level.
99.	Comprehends homonyms.
100.	Comprehends a jumbled sentence.
101.	Comprehends the concept of gender.

102.	Comprehends musical instruments and categorize them.
103.	Comprehends concept of weather.
104.	Comprehends articles in sentence level.
105.	Comprehends height, weight.
106.	Comprehends more structured games.
107.	Comprehends ascending and descending order.
108.	Comprehends complex adjectives (clever, brilliant, dull etc).
109.	Improved judgment skills.
110.	Comprehends procedures in a sequence.
111.	Comprehends time and money concept.
112.	Comprehends complex money concept (quarters, minutes, seconds etc).
113.	Comprehends months of a year, days of the week.
114.	Comprehends festivals.
115.	Comprehends festivals and related events.
116.	Able to recognize rhyming words at a complex level.
117.	Comprehends blending.
118.	Comprehends an incomplete story and completes it.
119.	Comprehends complex homophones (their-there)
120.	Comprehends simple word combinations.
121.	Comprehends reverse and transposed letters.
122.	Automatic decoding.
123.	Comprehends simple sentences written.
124.	Expand basic of sight words.
125.	Comprehends simple rhymes
126.	Improved knowledge of writing.
127.	Comprehends complex rhymes

128.	Comprehends conversation
129.	Comprehends complex stories
130.	Comprehends temporal words (before, since)
131.	Comprehends irregular and regular plurals.
132.	Comprehends PNG markers.
133.	Comprehends temporal words (before, since, until, while)
134.	Comprehends rhyming words
135.	Comprehends multiword definitions

APPENDIX B

List of questionnaire prepared during the pilot study for Expressive skills

Sl.No	QUESTIONS
1.	Use proper structure of sentence. (SVO)
2.	Gives full name on request.
3.	Expresses own possession (me, my)
4.	Exhibits private speech (monologue) and socialized speech (requests, greeting etc).
5.	Expresses dimensional words (big/little, high/low).
6.	Use temporal words (After, now)
7.	Use grammatical morphemes (‘ing’, ‘s’, ‘ed’)
8.	Use linking verbs (am, is, are, was)
9.	Use declaratives (I don’t want, no etc)
10.	Use repair strategies (modify subject, object)
11.	Able to repeat simple rhymes without assistance.
12.	Use pronouns (he, she).
13.	Uses regular plural inflection (boxes, pens).
14.	Uses irregular past tense verb (went, came)
15.	Exhibits role play.
16.	Expresses his name, age and sex consistently.
17.	90% intelligibility.
18.	Adjusts speaking style according to listener.
19.	Able to repeat simple rhymes without assistance.
20.	Express short stories.
21.	Narratives without plot (without characters).
22.	Express object usage (spoon- to eat).

23.	Maintain interaction with the listener.
24.	Gives full name on request with initials
25.	Shifts the topic.
26.	Able to recount past experiences chronologically.
27.	Use complex pronouns (his, her, their etc).
28.	Plays turn taking.
29.	Makes conversational repairs and correct others.
30.	Add more fillers to listener's message.
31.	Participate in longer utterances.
32.	Uses additives (add).
33.	Uses causal words (because).
34.	Use contrastive (but).
35.	Expresses in complex sentence.
36.	Expresses reflexive pronouns. (myself, herself)
37.	Mastering of sounds
38.	Expresses articles (the, a).
39.	Use deitic skills (me/my, i/u).
40.	Use creative vocabulary (stove-cooking thing).
41.	Use syntagmatic relations.
42.	Use paradigmatic relations.
43.	Use dimensional words.
44.	Use spatial words.
45.	Expresses simple prepositions in sentences.
46.	Use kinship words (family).
47.	Express tenses in complex sentences.
48.	Use 3rd person present tense singular (he runs).

49.	Use multiple modifiers.
50.	Use complex pronouns (him, her, their, them)
51.	Use complex negatives (wouldnot did not, shouldnot).
52.	Expresses ‘how” questions.
53.	Expresses figurative language (metaphor).
54.	Able to use 5-6 words in a sentence.
55.	Mastered complex sentences.
56.	Expresses complex prepositions (between, towards, over, across, beside)
57.	Expresses occupation, address and phone number with name.
58.	Express 6-8 colors and shapes.
59.	Express prepositional clauses.
60.	Use more elaborated discussion of emotions and feelings verbally.
61.	Uses conjunctions (when, so, if, because, but, if, and).
62.	Asks for the meaning of words.
63.	Expresses in 4-5 word sentences.
64.	Uses wh-infinitive clauses (I don’t know where to put this).
65.	Uses if and so in sentences.
66.	Uses irregular plurals consistently.
67.	Uses simple passive sentences (apple was eaten by me).
68.	More errors in different blends.
69.	Segment simple words. (aero-plane).
70.	Conversational act includes form, content and function.
71.	Mastered adjectives and nounphrases.
72.	Uses derivative suffix (‘er’).
73.	Expresses word definition.
74.	Expresses subordinate and superordinate categories.

75.	Express multiple word meanings.
76.	Segmenting complex words.
77.	Expresses idiomatic expression.
78.	Express rhyming words.
79.	Expresses 6-8 words in a sentence.
80.	Expresses true narratives. (narrates a story or incidents)
81.	Expresses true stories with plots.
82.	Mastered all vowels and consonants.
83.	Mastered complex passive and imperative sentences.
84.	Expresses problem solving.
85.	Expresses divergent and convergent production.
86.	Topic shading.
87.	Expresses stacked repair sequences.
88.	Uses adverbial conjunctions (therefore, whoever, thus, hence).
89.	Expresses stories which include around 7 elements and episodes.
90.	Established consonant blends.
91.	Control on rate, pitch and volume.
92.	Numbering till 100.
93.	Expresses primary colors.
94.	Answers simple questions by comprehending stories.
95.	Expresses complex rhyming words.
96.	Expresses names of the professionals.
97.	Expresses time concept (day, night, noon, evng).
98.	Expresses discrimination, compare and contrast in complex pictures.
99.	Expresses money concept.
100	Expresses simple opposites

101	Expresses similarities and differences.
102	Expresses measuring skills (half, full, little, more etc)
103	Expresses action verbs in sentences.
104	Expresses object and its use in complex sentences.
105	Guess the word when phonemic cues are given.
106	Able to write 2-3 letter words.
107	Able to make simple words from complex long word.
108	Express tenses in complex sentences.
109	Expresses common lexical category (atleast 5-6 in each)
110	Describes lexical items in sentences (elephant – it's an animal, it is very big etc).
111	Expresses complex jokes.
112	Able to sing with actions.
113	Expresses paragraphs.
114	Able to complete the incomplete sentences.
115	Form own sentences for the given word.
116	Expresses the concept of gender.
117	Expresses the names of musical instruments by categorizing them.
118	Expresses articles appropriately (the, a and an).
119	Expresses weather (hot, cold, sunny etc).
120	Expresses height, weight
121	Expresses properties of objects.
122	Able to perform counting in groups.
123	Expresses ascending and descending order.
124	Expresses complex adjectives (heavy, clever).
125	Expresses procedure in a sequence.
126	Expresses simple time and money concepts.

127	Complex time concepts (quarters, minutes, seconds).
128	Expresses days of the week, months of the year.
129	Expresses names of the festivals and related events
130	Expresses names of the seasons (winter, rainy and summer).
131	Expresses blending (butterfly).
132	Completes the story if incomplete.
133	Expresses simple requesting skills (please)
134	Expresses complex homophones (their-there).
135	Writes 3-4 letter words.
136	Copies similar sentences.
137	Reads simple word combinations.
138	Improved fluency in reading.
139	Writes simple sentences.
140	Expresses PNG markers
141	Expresses adjectives in sentences (good, bad, dirty)
142	Expresses requesting skills at sentence level (may, sorry, please etc)
143	Expresses opposites in sentences.
144	Expresses simple tense forms (past, present, future)

APPENDIX C

Modified Receptive and Expressive Language Test (M-RELT) for children between three to seven years

Sanction no: SH/SLP/ ARF/ 4.65/ 2013-2014
Total grants: Rs. 4,00,000.00

Dr. Dr. Deepa M. S.

Dr. Shyamala K. C.

Ms. Deepthi. K. J.

All India Institute of Speech and Hearing
Manasagangothri, Mysore-570006

February, 2016

About the Scale

Modified Receptive and Expressive Language Test (M-RELT) is the modified and upgraded version of the scale "Receptive and Expressive Language Test" given by Department of Speech-Language Pathology.This scale can be used for screening language in children in the age range of 3-7 years. This scale helps in identifying any delay in acquisition of receptive or expressive language skills in children. Also it helps in identifying if there are any discrepancies between the receptive and expressive language skills.

M-RELT is an inexpensive language scale which is easy to administer and accurate. This scale is intended to depend on historical information derived from interviews and on direct observations made by the evaluator along with a norm reference to aid in assessment. This test is useful in not only assessment but also it helps in planning intervention programs.

Subtests: The scale consists of two subtests.

1. Receptive language
2. Expressive language

Testing time: The time required to administer complete scale is between 20-30 minutes. The duration depends on the age of the child, co-operation of the informants and child as well as language level of the child.

Test procedure

M-RELT consists of two core subtests viz., receptive language and expressive language. Each core subtest is further divided into 8 groups according to chronological age viz., 3.0-3.6; 3.6-4.0; 4.0-4.6; 4.6-5.0; 5.0-5.6; 5.6-6.0; 6.0-6.6; and 6.6-7.0. Each age group has eight receptive and eight expressive skills.

The information for the test is obtained from caregiver interview; hence the foremost step is to select a reliable informant. The examiner can start from the skills listed under the child's chronological age or even lesser than chronological age. Presence of a particular skill is given a

score of 1; emerging skills are give score of 0.5 and absence of skills are given a score of 0. If the child exhibits at least 50%of the skills listed in each subtest, the examiner can progress to test the skills mentioned in the next age group. Thus basal and ceilings are obtained for both subtests.

The total receptive and expressive skill's score are computed separately. They are then compared with the normative given in the appendix. This will give the examiner the estimated language age of the child under examination.

Modified Receptive and Expressive Language Test

3.0 – 3.6 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends continuous verbs in sentences. ('ing') Eg: sleeping, eating etc	**E1**	Expresses own possession (me, my, mine).
R2	Comprehends wh-questions (what, where, who).	**E2**	Expresses action verbs in sentences (I am eating, mommy is sleeping).
R3	Comprehends deitic skills (me/my, I/u etc).	**E3**	Use kinship words (family).
R4	Comprehends cause-effect relationship (simple) Eg: Mamma will scold if I lose the toy.	**E4**	Use pronouns (he, she, it).
R5	Comprehends 2-3 step related commands. Eg: Keep the plate, go out and call daddy.	**E5**	Add more fillers to listener's message (prolongation of vowel).
R6	Comprehends the concept of gender.	**E6**	Expresses dimensional words (big/little, high/low).
R7	Matches primary colours.	**E7**	Able to sing rhymes with assistance.
R8	Comprehends simple rhymes with actions.	**E8**	Gives full name on request (without initials).

3.6 – 4.0 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends turn taking (waits for his/her turn)	**E1**	Expresses simple opposites. Eg: big-small, up-down etc
R2	Comprehends simple time concepts (day, night, noon, evening)	**E2**	Expresses sentence in proper structure of that language. (SVO, SOV)
R3	Comprehends functions of objects (spoon is used to eat food)	**E3**	Express object usage in sentences (spoon- to eat).
R4	Comprehends case markers. Eg: I came '**from'** school	**E4**	Expresses simple prepositions in sentences (Ball is 'in' the room)
R5	Comprehends temporal words (after, now). Eg: I will come now.	**E5**	Use complex pronouns (him, her, their, them)
R6	Comprehends third person present tense singular/plural. Eg: He/she/it is going home.	**E6**	Able to sing rhymes without assistance
R7	Comprehends simple stories (Eg: thirsty crow, fox and the grapes).	**E7**	Expresses simple requesting skills at sentence level spontaneously (please)
R8	Comprehends PNG markers (He/she/it is	**E8**	Expresses 4-5 words in a sentence

	running)		

4.0 – 4.6 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends complex rhymes Eg: One two buckle my shoe	**E1**	Expresses requesting skills at sentence level (may, sorry, please etc)
R2	Comprehends conversation	**E2**	Expresses irregular past tense verb (went, came)
R3	Comprehends concept of different tastes. Eg: Lemon is sour, biscuit is salty etc	**E3**	Expresses adjectives in sentences (good, bad, dirty etc)
R4	Points 7-8 lexical items in each category	**E4**	Use 3rd person present tense singular (he runs)
R5	Comprehends adjectives (ugly, dirty, beautiful etc)	**E5**	Express primary colors (black, white, red, green, blue, yellow) consistently
R6	Comprehends tenses in conversational level (simple past, present and future tense)	**E6**	Expresses temporal words (After, Now)
R7	Comprehends all wh-questions at conversational level	**E7**	Expresses time concept (day, night, noon, evng).
R8	Comprehends simple conjunctions (when, so, if)	**E8**	Expresses PNG markers

4.6 – 5.0 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends categorization of lexical items. Eg: fruits, vegetables, animals (wild and domestic).	**E1**	Exhibits (monologue) during play activity (speaks to the toy) Eg: acts as teacher, dressing doll
R2	Comprehends complex conjunctions (because, and, but).	**E2**	Expresses short stories
R3	Comprehends complex and compound sentences.	**E3**	Expresses simple tense forms (past, present, future)
R4	Comprehends temporal words (such as before, since, until, while).	**E4**	Expresses more frequently in complex sentences
R5	Comprehends if and so sentences. Eg: I will take you to market 'if' you finish your homework.	**E5**	Names common lexical categories (at least 5-6 in each)
R6	Comprehends professionals (such as driver, postman, cobbler etc).	**E6**	Expresses opposites in sentences (fat-thin, little-more, tall-short etc)
R7	Comprehends irregular pronouns in sentences (many, few, all, any, one etc).	**E7**	Expresses complex prepositions (between, towards, over, across, beside)
R8	Comprehends complex stories	**E8**	Expresses simple emotions and feelings verbally

5.0 – 5.6 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends syntagmatic relations. Eg: Ramu likes chocolate	**E1**	Use temporal words (before, since, while, until etc)

R2	Comprehends paradigmatic relations	**E2**	Expresses all wh-questions consistently
R3	Matches animal with their younger ones	**E3**	Use syntagmatic relations
R4	Comprehends subordinate and super ordinate features	**E4**	Use paradigmatic relations
R5	Comprehends wh-infinitive clauses (I don't know where to put this)	**E5**	Expresses conjunctions (when, if, so, but, and, because) in sentences.
R6	Comprehends 6-8 colors and shapes	**E6**	Expresses subordinate and superordinate categories (lists names of fruits when said fruits)
R7	Comprehends festivals and related events	**E7**	Expresses in 6-8 word sentences.
R8	Comprehends rhyming words	**E8**	Uses wh-infinitive clauses (I don't know where to put this)

5.6 – 6.0 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends stories and answers questions related to it	**E1**	Expresses names of the professionals (Doctor, driver, postman, cobbler etc)
R2	Comprehends procedures in a sequence	**E2**	Makes conversational repairs and correct others.
R3	Comprehends complex negatives (wouldn't, shouldn't, haven't, didn't)	**E3**	Expresses names of the festivals and related events
R4	Comprehends adverbial conjunctions (therefore, whoever)	**E4**	Express 6-8 colors and shapes.
R5	Comprehends positive, comparative and superlative degree (bigger, biggest)	**E5**	Expresses true narratives (Narrates a real story or incidents)
R6	Able to recognize rhyming words at a complex level	**E6**	Express occupation, address and phone number
R7	Comprehends simple money and time concept	**E7**	Expresses procedures in a sequence
R8	Comprehends days of the week, months of the year	**E8**	Express rhyming words

6.0 – 6.6 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends situational jokes, shocks	**E1**	Expresses complex adjectives (heavy, clever).
R2	Comprehends passive sentences.	**E2**	expresses complex negatives (wouldn't, shouldn't, haven't, didn't)
R3	Comprehends complex adjectives (clever, brilliant, dull etc)	**E3**	Expresses adverbial conjunctions (Therefore, whoever, thus, hence)
R4	Comprehends more structured games	**E4**	Use compound sentences. Eg: Everyone was playing so I also joined them with my friend.
R5	Comprehends ascending and descending order	**E5**	Express all forms of tenses in complex sentences. Eg: Daddy and Mummy will be going to office tomorrow as today is Sunday.
R6	Comprehends irregular and regular plurals	**E6**	Recites poems, shlokas etc on their own
R7	Comprehends concept of weather (hot, sunny, cold)	**E7**	Expresses ascending and descending order.
R8	Comprehends figurative language (metaphor) Ex: she is like lion in the class	**E8**	Expresses days of the week, months of the year.

6.6 – 7.0 years

Sl.no	Reception	Sl.no	Expression
R1	Comprehends compare and contrast of complex pictures	**E1**	Expresses discrimination, compare and contrast in complex pictures.
R2	Comprehends multiword definitions.	**E2**	Expresses word definition
R3	Able to judge appropriateness	**E3**	Expresses divergent and convergent production. Eg: Divergent- describes parts/characters/properties of objects when named Convergent- vice versa
R4	Comprehends simple additions and subtractions	**E4**	Expresses regular and irregular plurals consistently (sheep-sheep)
R5	Comprehends homonyms.	**E5**	Expresses measuring skills (half/full/quarter, height etc)
R6	Comprehends idioms and proverbs	**E6**	Expresses incomplete stories
R7	Comprehends measuring skills (half/quarter/full, height, weight etc)	**E7**	Expresses simple time and money concept.
R8	Comprehends an incomplete story and completes it	**E8**	Expresses figurative language (metaphor)

Score Sheet:

1 = skill present	**0.5 = skill emerging**	**0= skill absent**

	Receptive Language Skills		**Expressive Language Skills**	
3.0 – 3.6 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	

3.6 – 4.0 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	
4.0 – 4.6 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	

	Receptive Language Skills		**Expressive Language Skills**	
4.6 – 5.0 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	
5.0 – 5.6 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	

	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	
5.6 – 6.0 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	

	Receptive Language Skills		**Expressive Language Skills**	
6.0 – 6.6 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	
	R7		**E7**	
	R8		**E8**	
6.6 – 7.0 years	**R1**		**E1**	
	R2		**E2**	
	R3		**E3**	
	R4		**E4**	
	R5		**E5**	
	R6		**E6**	

	R7		**E7**	
	R8		**E8**	
Total	**Receptive Language Skills**		**Expressive Language Skills**	

Normative values for Interpretation

Age groups	Reception	Expression
3.0 – 3.6	5 - 8	6 - 8
3.6 – 4.0	13 - 16	11 - 16
4.0 – 4.6	21 - 24	21 - 24
4.6 – 5.0	29 - 32	29 - 32
5.0 – 5.6	37 - 40	37 - 40
5.6 – 6.0	45 - 48	45 - 48
6.0 – 6.6	53 - 56	53 - 56
6.6 – 7.0	61 - 64	61 - 64

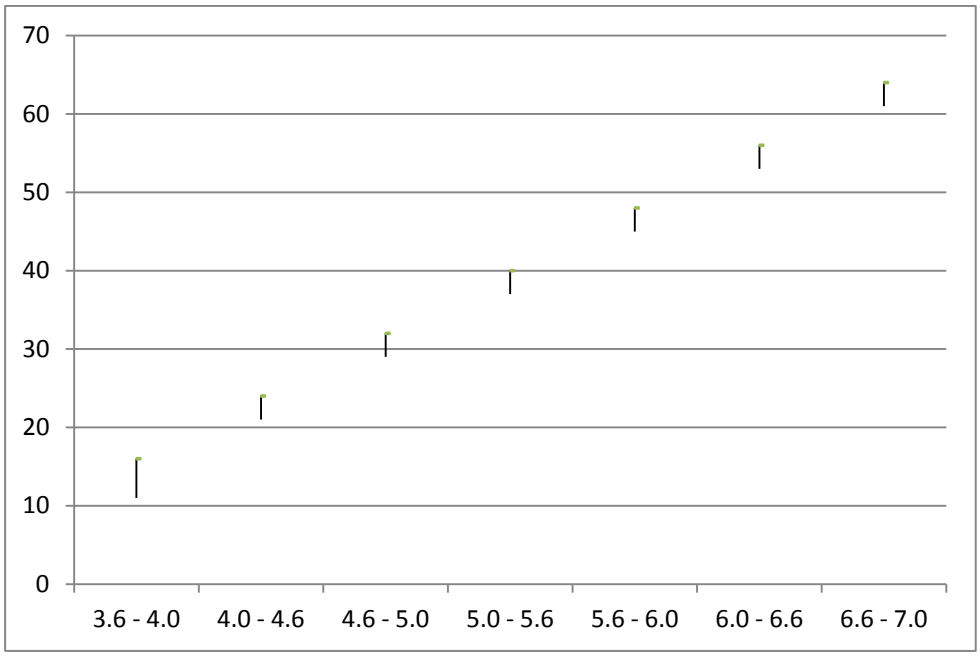

Figure 14: Graphical representation of cut-off scores for reception domain for children in the age range of 3.0 to 7.0 years

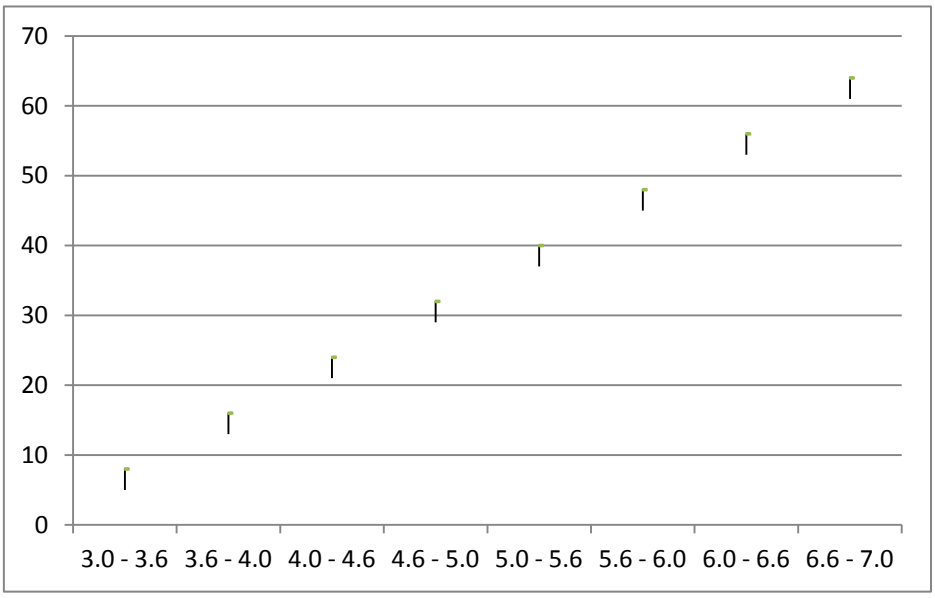

Figure 15: Graphical representation of cut-off scores for expression domain for children in the age range of 3.0 to 7.0 years