

**LISTENING COMPREHENSION ABILITIES IN ADOLESCENTS  
WITH LEARNING DISABILITY**

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**P01II21S0027**

A Dissertation Submitted in Part Fulfillment for the

Degree of Master of Science

(Speech-Language Pathology)

University of Mysore



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**SEPTEMBER 2023**

## **CERTIFICATE**

This is to certify that this dissertation entitled “**Listening comprehension abilities in adolescents with learning disability**” is a bonafide work submitted in part fulfillment for the degree of Master of Science (Speech-Language Pathology) of the student Registration Number: P01II21S0027. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

Mysuru  
September, 2023

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## DECLARATION

This is to certify that this dissertation entitled “**Listening comprehension abilities in adolescents with learning disability**” is the result of my own study under the guidance of Dr. Priya M. B, Assistant Professor, Department of Speech Language Pathology, All India Institute of Speech and Hearing, Mysuru, and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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## **CHAPTER I**

### **INTRODUCTION**

The development of language is influenced by interaction with its "end organs," which are its contacts with the outside world (Elliot, 1999). The end organs include (a) the sensory systems that take in information from the environment, such as the eyes when reading written language and the ears when listening to aural language; and (b) the motor systems that act on the environment both physically and socially during literacy learning, such as the hand generates written language to describe ideas and the mouth when it generates expressive language.

Communication is a process which involves a speaker and a listener. Speaking alone does not constitute communication until and unless it is comprehended by the listener (Dolberg & Rivers, 1978). Listening skills has been well established as a prerequisite for language learning. A simple reading model developed by Gough and Tunmer (1986) claimed that word recognition and linguistic comprehension are the two main components of reading comprehension. Word recognition in this context refers to the capacity to translate printed characters into pronounceable words we linguistic comprehension refers to the capacity to comprehend literature that is heard rather than read. Later, linguistic comprehension was derived as listening comprehension. Listening comprehension is considered a very important measure because it contributes to increasing the variance in reading comprehension as individuals progress through grades and gain reading experience (Catts et al., 2006). Listening comprehension and reading comprehension are often considered to involve similar processes (Lund, 1991).

The simple view model provides the basis of language to improve reading and listening comprehension.

The listening comprehension milestone given by American Speech and Hearing Association (ASHA, 2007) states that the ability to understand spoken words develops as a child achieves pre-reading abilities. Listening comprehension plays an important role in language development and academic achievement. Listening comprehension is a very reliable indicator of academic success (Nation & Snowling, 2004). The cause of early learning difficulty is weakness in the child's ability to comprehend spoken language. If the deficit in listening comprehension is not identified in the early stages, it leads to a deficit in reading comprehension, poor word identification skills, difficulty following oral instructions, problems remembering homework, assignments, and personal details (phone number, address, etc.), which in turn will result in poor academic achievement in adolescence (Nation & Snowling, 2004). In view of these findings, listening comprehension is most often included as one of the components in the assessment of Learning Disability (LD) (For example, Early Literacy Screening Tool by Shanbal et al., 2009).

Tasks such as story comprehension, receptive vocabulary, and expressive vocabulary are typically used to assess listening comprehension skills (Berninger & Abbott, 2010). Assessment of listening comprehension in adolescents revealed that three of the listening comprehension subcomponents—morphological awareness, syntactic understanding, and word reading—contributed to reading comprehension in children between the ages of 9 and 13 (Gottardo et al., 2018).

## 1.1 Need for the study

Listening plays an important role in understanding what the speaker is saying, and children with a deficit in listening comprehension are often reported to fail in following classroom instructions. They also exhibit poor word identification and association difficulty that might eventually lead to poor reading and writing skill, thereby impeding their overall academic achievement. The contribution of listening abilities in language comprehension and academics are widely researched in young children. Studies have also documented the utility of different listening comprehension strategies in improving reading comprehension in children with LD (Brand-Gruwel et al., 1998; Kendeou et al., 2009). Gottardo et al. (2018) documented listening and reading comprehension of 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> grade children, and reported that the assessment of listening comprehension provides an insight into the learning difficulties encountered in their school years. However, listening comprehension abilities have not been explored greatly in adolescents.

Adolescence is a crucial and sensitive stage of development in which proficiency of language is enhanced and there is an increase in communication skills. There is also a significant development in cognitive skills such as attention and memory (Choudhary, 2014). Owing to physical and hormonal changes during this stage, adolescents are at risk for acquiring deviant behaviours and mental problems throughout their lifetime that are further attributed to the sensitivity of the developing adolescent brain (Tate et al., 2020)

Adolescents with LD are at a distinct disadvantage for comprehending the information, and thus for achieving academic success. The continued academic vulnerability of adolescents often reflects the interactive effects of persistent language

problems, restrictions on later language development resulting from reduced reading, and restricted exposure to different texts and text-based information. Although these students may appear to be paying attention to a speaker, they often are not processing the verbal information adequately or efficiently (Ward-Lonergan et al., 1998). In view of these, it may be of interest to explore listening comprehension abilities in typically developing adolescents and those with LD.

### **1.2 Aim of the study**

The aim of the study was to compare listening comprehension abilities in adolescents with and without LD.

### **1.3 Objectives of the study**

The objectives of the study were as follows:

- To study the performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension
- To study the performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension
- To compare the performance of typically developing adolescents and those with LD on listening comprehension tasks

### **1.4 Hypotheses of the study**

The study assumes null hypothesis for each of the objectives as follows:

- There is no significant difference between the performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension

- There is no significant difference between the performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension
- There is no significant difference between typically developing adolescents and adolescents with LD on listening comprehension tasks



## **CHAPTER II**

### **REVIEW OF LITERATURE**

An individual's level of language and verbal symbols are important aspects in the learning process, and are often considered essential tools for processing, comprehension, and expression (Varghese, 2000). Speaking and writing are regarded as expressive modalities of language whilst reading and listening are receptive modalities. When these modalities are compared, speech and hearing are seen as the primary language modalities owing to their early acquisition (Varghese, 2000).

The cognitive-linguistic-communicative systems share various surface characteristics and differences in modalities, but they all contribute to language learning. Deficits in language acquisition shows in the form of poor understanding and poor comprehension of what is being said. These can interfere with listening comprehension and task performance as well as difficulties with speech, language, and listening skills (Varghese, 2000). Therefore, listening is crucial to language learning and plays an important role in language learning.

#### **2.1 Listening skill**

Listening skills have been well-established as a prerequisite for language learning. Listening, speaking, reading and writing are the normal sequence of language development. Listening and reading can be considered as the decoding functions, and speaking and writing are considered the encoding functions (Varghese, 2000). Listening is a process that differs from hearing, wherein selection, organization, and interpretation of ideas take place in active listening. It also requires evaluation,

acceptance or rejection, internalization, and appreciation of the ideas expressed (Varghese, 2000).

According to Bishop (1997), there are different stages of spoken language comprehension including phonology, semantics, syntax, and pragmatics. The authors claimed that comprehension of spoken language occurs through the phonological representation of information encoded through listening. Additionally, the phonological representation is retained in the long-term memory as a mental lexicon, which is important for connecting a sound pattern to meaning and making the information more abstract.

The stages of listening comprehension comprise of receiving, interpreting, recalling, evaluating, and responding (Jones, 2016). Receiving is the initial stage in which the stimulus is received through the auditory sense. It is viewed as a physiological process that incorporates the cognitive component when the information is listened through the auditory sense when compared to subsequent stages. This states that receiving is considered as an important factor in good listening comprehension. In the stage of interpretation, listener attempts to give meaning to the combined information by utilising the cognitive and other related processes. The recalling stage will attach meaning by connecting the information with previous experience. The evaluation process involves making judgements about the credibility, completeness and worth of the information. Credibility will help the individual to determine whether the speaker's statement is correct or not. Completeness helps individuals to evaluate the message being discussed as desirable or undesirable and worth helps in making a valuable judgement. Finally, the responding stage requires attention and

comprehension of the verbal and non-verbal message in order to provide a correct response with respect to the original stimulus.

A review of listening comprehension abilities in individuals in the age range of 20-90 years revealed that listening comprehension changed similarly across the adult lifespan (Sommers et al., 2011). Comprehension of LISN passage (lectures, interviews and narratives) followed by three questions for each paragraph were assessed. In addition, they measured the auditory sensitivity to determine the presence of hearing loss. The authors also stated that listening comprehension remained unchanged until a particular period and started declining during 65-70 years. Greater decline was observed predominantly in older individuals which indicated that both perceptual and cognitive mechanisms mediated listening comprehension.

The role of language abilities in listening comprehension was explored in English speaking children in the age range of 8 to 13 years (Gottardo et al., 2018). The authors evaluated the role of vocabulary knowledge, morphological awareness, and syntactic knowledge. The results indicated that vocabulary can be used as a stand-in for listening comprehension assessment, whereas morphological awareness, and syntactic knowledge could be considered as higher-level components that can help with better understanding of listening comprehension.

Recent studies have determined the contribution of listening comprehension in adolescents to emotional intelligence which in turn affect their functioning at school (Froiland & Davison, 2020). The authors investigated three measures namely the social perception, reading comprehension and listening comprehension in 40 adolescents. The

results indicated that reading comprehension accounted for 36% variance in achievement tests while listening comprehension accounted for 54% variance.

## **2.2 Relationship between listening skills and reading**

Listening comprehension is one of the dominant factors in reading comprehension especially in the elementary grades. Word recognition and reading comprehension in second, fourth, and eighth grade children were assessed by Hogan et al., (2014) and the authors concluded that children who had poorer comprehension failed to develop reading comprehension skills. This was reasoned out to be primarily due to the deficit in listening comprehension and hence, listening comprehension should be taken into consideration during assessment.

Reading skills and listening skills are reported to be independent of one another in which development of reading comprehension is influenced by listening skills. This was supported by an investigation by Roch et al. (2011) who tested the hypothesis that listening comprehension and reading comprehension are causally related and examined the improvements in reading skills, listening, and reading text comprehension in adolescents with Down's syndrome in the age range of 11 to 19 years. The study implied that listening skills should be considered as highly relevant to educational issues.

Diakidoy et al. (2005) investigated the relationship between listening and reading comprehension across grade levels. 612 students in grades 2, 3, 6 and 8 were assessed on tasks that included two narratives and two expository texts. The comprehension abilities were also assessed using sentence verification tasks. The results revealed a relationship between reading and listening comprehension in narrative text and also

found that reading comprehension levels were higher than listening comprehension levels in Grade 8 regardless of text type. The authors reported that the differences between listening and reading abilities decreases with increasing grade levels.

### **2.3 Listening comprehension and language impairment**

Listening comprehension has been examined in individuals with different language disorders. Fletcher and Clayton (1994) assessed listening comprehension in adolescents with intellectual disability in the age range of 12 years to 17 years. The study was designed to compare the performance of adolescents with intellectual disability on three different measures namely unassisted story recall, verbally prompted story recall and visually prompted story recall. The results depict that comprehension level was low and inter-subject variability was high in this population and all three measures correlated with the short-term memory. The authors concluded that the deficit in comprehension is mainly due to poor short-term memory, and hence recommended that both educational practice and future research can focus on developing effective measures of listening comprehension in individuals with intellectual disabilities.

The working memory constraint of listening comprehension was assessed in typically developing adolescents and adolescents with Traumatic Brain injury (TBI) (Ramsay, 2010). Receptive vocabulary, recalling sentences, formulated sentences and following sentences were assessed using a standardised test tool. The findings showed a significant difference between the two groups where adolescents with TBI performed poorer on listening comprehension tasks when compared to the typically developing peers.

An investigation into the association between listening comprehension of texts and sentences and the likelihood of having Down syndrome in pre-schoolers was indicated that Down syndrome children performed better in text comprehension than sentence comprehension because of prior knowledge of vocabulary (Florit et al., 2011). The authors used Test of Listening Comprehension (3- 8 years) to evaluate listening comprehension of texts while listening comprehension of sentences were assessed using the Test of Evaluation of Linguistic Comprehension.

Listening comprehension deficits are reported in children who are deaf or hard of hearing. Arfe (2015) examined the discourse level listening comprehension skills by comparing the oral and written narratives in children who are deaf or hard of hearing using wordless picture book and the task of writing stories. The participants included 42 Italian children aged 7 to 15 with moderate to severe hearing loss compared to age matched 48 control children. The authors found that children with hearing impairments exhibited poorer discourse both in oral and written narration.

#### **2.4 Listening comprehension in Learning Disability**

Poor auditory abilities including listening comprehension are often reported in children with Learning Disability (LD) (Catts et al., 2006; Ganschow & Sparks, 2006). Difficulties with listening and decoding skills as well as listening comprehension are reported across subgroups of LD (Catts et al., 2006). A study comparing listening comprehension in 30 adolescents with LD and 30 academically achieving adolescents revealed that 73% of adolescents with LD scored lower than the control group (Riedlinger-Ryan & Shewan, 1984). The authors examined the battery of auditory language comprehension which included the token test to assess vocabulary

knowledge, the test of linguistic concepts and the auditory comprehension test for sentences. It was also suggested that the token test and test of linguistic concepts can be used as a prominent test tool to assess listening comprehension in this population.

Copmann & Griffith (1994) investigated listening comprehension in Event and Story structure recall in children with Specific learning difficulties, language impairments and typically developing children. The tasks used were recall of events and recall of story structures of a narrative and an expository text. The authors measured the listening comprehension skills by the effects of group, verbal age, structure of text and the order of presentation on recall. The results revealed that there is a significant difference between language-impaired children and those with specific learning disability on text recall, and text type. Deficits in narrative text were reported to be more when compared to expository text in all participants. Overall, the performance of children with specific learning disability was similar to typically developing children while language-impaired children performed poorer than the other groups.

Hagtvet (2003) investigated listening and reading comprehension in school-going children with poor decoding ability. The author assessed the written cloze task and story recalling task to check the vocabulary, syntactic and semantic knowledge. The written cloze task had a list of sentences with missing words to fill the sentences with appropriate words and a gist of the story was asked in the story recalling task. The results revealed that listening comprehension strongly predicted the written cloze task when compared to reading comprehension.

Ward-Lonergan et al. (1998) compared the listening comprehension and memory skills in adolescents with LD and typically developing adolescents between the ages of 12.5 and 14.5 years. The authors evaluated two distinct discourse structures on listening comprehension that incorporate literal and inferential components, each of the components includes a comparison and a cautionary lecture. They also evaluated both group's recall capacities. The results showed that LD group scored less than the typically developing children, but both the groups performed better in inferential comprehension for the caution lecture over the comparison lecture and both the groups demonstrated a significant difference in the literal comprehension. Similar findings were reported by Hay and Moran (2005). Listening comprehension strategies are also incorporated in the intervention of children with LD which in turn influence their academic achievements (Van Den Bos et al., 1998).

In the Indian context, Divyashree (2017) investigated the discourse level listening comprehension in third and fourth grade Kannada-speaking students with LD at the factual and inferential levels. The results showed that the fourth grade typically developing students performed better than the typically developing third grade students in inferential questions. It was also observed that children with LD in 4<sup>th</sup> grade outperformed those in the 3<sup>rd</sup> grade. The author concluded that there is a significant difference in discourse-level listening comprehension for factual questions and inferential questions related to listening comprehension.

In summary, the review of literature highlights the important role of listening comprehension in effective communication and later academic achievements. This is also true in the adolescence period during which there is a significant increase in the



academic load. Considering that adolescence is a crucial and sensitive period of development, deficits in any of the prerequisites skills of reading and writing will further exaggerate their scholastic difficulties. Assessment of listening comprehension should be an integral component of a comprehension evaluation in LD and also the intervention protocol. However, there are limited research evidences with regard to listening comprehension abilities in the adolescent age groups, particularly in children with LD. An understanding of the nature of listening comprehension deficits in adolescents with LD, if any, will provide deeper insights into the assessment and management of this population. In view of these findings, the present study was taken up to evaluate listening comprehension skills in adolescents with LD in comparison to typically developing peers.

## CHAPTER III

### METHOD

The aim of the study was to compare listening comprehension abilities in adolescents with and without Learning Disability (LD) in the 7<sup>th</sup> and 8<sup>th</sup> grades.

#### 3.1 Objectives of the study

The objectives of the study were as follows:

- To study the performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension
- To study the performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension
- To compare the performance of typically developing adolescents and those with LD on listening comprehension tasks

#### 3.2 Research Design

Standard group comparison was used wherein the performance of typically developing adolescents and the adolescents with LD was compared on various tasks of listening comprehension.

#### 3.3 Participants

A total of 60 adolescents studying in grades 7 and 8 were recruited for the study. The participants were divided into two groups namely the control group and clinical group. The control group included 50 typically developing children from 7<sup>th</sup> and 8<sup>th</sup> grades with 20 participants in each grade (13 males:12 females) whereas the clinical

group included 10 children with LD from the same grades. The demographic details of children with LD are given in Table 3.1.

**Table 3.1**

*Demographic details of adolescents with learning disability recruited in the study*

<b>Subject No.</b>	<b>Age (years)</b>	<b>Gender</b>	<b>Grade</b>
1	13	Male	7
2	13.5	Male	7
3	13.7	Male	7
4	13.1	Female	7
5	13	Female	7
6	14	Female	8
7	14.1	Female	8
8	13.5	Male	8
9	14	Male	8
10	13.7	Male	8

### **3.3.1 Participant selection criteria**

The common selection criteria for inclusion in the study were as follows:

- All participants were attending regular school with English as the medium of instruction in the urban ambient environment of Mysore
- They had no history of change in the medium of instruction
- Were belong to the same socio-economic status
- Had no normal hearing acuity and normal/corrected vision
- Had no any oral structural deficits
- Had good proficiency in English language as assessed based on the Indian adaptation of the Language Efficiency and Proficiency Questionnaire (Ramya & Goswami, 2009)

In addition, participants in the control group had no history of speech, language and hearing problems which were ensured using the WHO ten questions screen for disability detection (Singhi et al., 2007). Participants in the clinical group had a clinical diagnosis of Learning Disability based on evaluations by a multidisciplinary team consisting of Speech Language Pathologist, Clinical Psychologist and Special Educator and they were chosen from a clinical set up. Adolescents with co-morbid conditions such as Attention Deficit Hyperactivity Disorder, Stuttering, Speech Sound Disorders or any other neurological conditions were excluded from the clinical group.

### **3.4 Stimuli**

The stimuli for assessing listening comprehension were considered under four domains as listed below:

3.4.1. Receptive vocabulary

3.4.2. Comprehension of spoken paragraph

3.4.3. Syntactic knowledge

3.4.4. Recalling sentences

#### ***3.4.1. Receptive Vocabulary***

Receptive vocabulary plays a major role in listening comprehension of first and second language acquisition (Ataş, 2018) and it is a passive strategy in listening. The stimuli for this domain were chosen from the Peabody Picture Vocabulary Test- *Fifth Edition (PPVT-5)* (Dunn, 2019), which measures listening and understanding of vocabulary. Specifically, items from set 11 and set 12 covering the age range of 13 to 16 years were included in the study.

A total of 24 stimuli were included in this domain. The task requires the participant to choose one of four images that best represents the definition of a term presented by the examiner. Scoring was done as per the original tool i.e. Score of 'one' was given for every correct response and score of 'zero' was given for every incorrect response.

### ***3.4.2. Comprehension of Spoken Paragraph***

Comprehension of spoken paragraph evaluates the ability to maintain concentration and attention while listening to spoken paragraphs that are getting longer and more complex, to interpret questions about the content of the information provided, and use critical thinking methods to interpret information. The questions evaluate the understanding of the primary idea, ability to recall facts and details, memory of event sequences, and capacity to draw conclusions and make predictions. The 'Comprehension of Spoken Paragraph' subsection of the Clinical Evaluation of Language Fundamentals-4<sup>th</sup> Edition (Semel et al., 2003) was included as stimuli.

The stimuli consisted of three paragraphs followed by five questions in each paragraph, thereby making a total of 15 questions. The participants were instructed to listen carefully to the spoken paragraph and answer the questions appropriately. Scoring was done as per the original tool i.e. Score of 'one' was given for every correct response and score of 'zero' was given for every incorrect response.

### ***3.4.3. Syntactic Knowledge***

Comprehension of sentence structure requires syntactic understanding. Syntactic knowledge allows the listener to identify the subject-verb-object elements of

the sentence and to relate ideas both within a sentence and across sentences (Gottardo et al., 2018). It is also regarded as a supralexical process related to listening comprehension (Share & Leikin, 2004).

The ‘Sentence Assembly’ subsection of the Clinical Evaluation of Language Fundamentals-4<sup>th</sup> Edition (Semel et al., 2003) was included as stimuli. The stimuli included 19 sentences and the participants were asked to rearrange stimuli that were previously categorised as single words or word pairs to arrange as a sentence. The sentences ranged in length from seven to 10 words, with later items containing lower frequency terms. The sentences generated was scored based on semantic and syntactic appropriateness as per the original tool i.e. Score of ‘one’ was given for every correct response (two correct sentences) and score of ‘zero’ was given for every incorrect response (No response/only one correct sentence).

#### ***3.4.4. Recalling Sentences***

This task tests the ability to listen and repeat spoken phrases of varying lengths and complexity while maintaining the verb tense, word meaning, and word structure (morphosyntax). The ability to mimic sentences is a potent tool for identifying deviancy in language as immediate recall is aided by semantic, morphological, and syntactic competence (short-term memory). The ‘Recalling Sentences’ subsection of the Clinical Evaluation of Language Fundamentals-4<sup>th</sup> Edition (Semel et al., 2003) was included as stimuli. The stimuli consisted of 27 sentences and the participants were required to recall the sentences presented one at a time. Responses were scored as in the original tool i.e. A score of ‘3’ was awarded for exact response, ‘2’ for response with one error, score ‘1’ for response with two or three errors and score ‘0’ for four or more errors.

### 3.5 Content validation

Considering that the stimuli chosen in the study were taken from tools standardised on native speakers of English language, content validation was carried out to assess the suitability of the same for native speakers of Kannada. Content validation of the stimulus were done by three speech-language pathologists, two psychologists and two teachers with a minimum of five years of experience in their respective fields. The parameters for validation was adapted from the Feedback Rating Questionnaire in Field Testing of Manual for Adult Aphasia Therapy- Kannada (Goswami et al., 2012).

The individual stimulus was rated on a 3-point rating scale for four parameters namely appropriateness (0- Not appropriate, 1- Appropriate but needs modification, 2- Appropriate), familiarity (0- Not familiar, 1- Familiar but needs modification, 2- Familiar), relevancy (0- Not Relevant, 1- Relevant but needs modification, 2- Relevant), and stimulability (0- Not stimuable, 1- Picturable but needs modification, 2- Stimuable). The picture stimuli was also rated on a 3-point rating scale for four parameters namely size of the picture (0- Not picturable, 1- Picturable but needs modification, 2- Picturable), colour and appearance (0- Not appropriate, 1- Appropriate but needs modification, 2- Appropriate), iconicity (0- Not recognizable and representational, 1- Recognizable and representational but needs modification, 2- Recognizable and representational), and arrangement (0- Not visible, 1- Visible but needs modification, 2- Visible). The experts were also asked to provide suggestions/remarks, if any, and these were considered before finalizing the stimuli.

All stimuli in the domains of Comprehension of Spoken Paragraph, Syntactic Knowledge and Recalling Sentences received a rating of '2' on each of the parameters and hence were included in the final stimuli without any modifications. However, few stimuli/pictures under the domain of Receptive Vocabulary were considered to be unsuitable for the population under study and hence, changes were incorporated accordingly. The modified stimuli are given in Appendix 1. The word stimuli 'dilapidated' was replaced by 'tattered' and the picture stimuli was suitably changed. Further, modifications were incorporated in the picture stimuli for the targets 'pastry', 'trumpet' and 'clamp'. The modified stimuli were presented to the experts and those that were given a rating of '2' was considered in the final set of stimuli to assess Receptive Vocabulary.

### **3.6 Procedure**

The study followed the ethical guidelines prescribed by the All India Institute of Speech and Hearing, Mysore (Venkatesan, 2009). A written informed consent was obtained from the authorities of the schools in which the participants were studying and a written informed assent was obtained from each participant before testing.

The stimuli in the different domains used to assess listening comprehension were presented to the participants in a recorded form in order to maintain uniformity in presentation and to eliminate tester bias. The target stimuli were spoken by an adult female with good proficiency in English language and clear diction. The audio recording was done in a sound treated room with a unidirectional microphone placed at a distance of 6 inches from the mouth of the speaker. The speaker was instructed to utter the stimuli as naturally as possible in a neutral tone. The spoken stimuli were



recorded using a sound recorder and then loaded onto a laptop. The recorded stimuli were played to 3 speech-language pathologists and they were asked to rate the clarity of production on a 3-point rating scale (0= Poor, 1=Fair, 2=Good). The recorded stimuli were rated as 'good' by all three experts in each of the domains, thereby validating the recorded stimuli.

The participants were tested individually in a quiet, distraction free room with adequate lighting and ventilation. The recorded stimuli were played through a laptop at comfortable loudness levels and participants were instructed to listen carefully and answer appropriately. The responses were noted down by the examiner and scored accordingly.

### **3.7 Scoring and Analyses**

The responses of individual participants were recorded on a response sheet and scored for each of the four tasks. The raw scores for each domain and the summed up total scores were tabulated for participants in the control and clinical groups. The group data was subjected to appropriate statistical analysis using the Statistical Package for Social Sciences (SPSS Inc, Chicago, Version 26). Descriptive statistics was used to compute the mean, median, standard deviation and interquartile ranges for the scores obtained by typically developing adolescents and adolescents with LD on the four tasks of listening comprehension.

Shapiro -Wilk's test was administered to check for normality, and the results indicated that the data did not follow normal distribution. Mann-Whitney U test was carried out to compare the scores between the two genders in each group and grade,

and also to compare the scores between the control and clinical group. Friedman's two-way analysis of variance was used to investigate the effect of task on listening comprehension abilities in the two groups of participants within each grade.

## CHAPTER IV

### RESULTS

The aim of the present study was to compare listening comprehension abilities in adolescents with and without learning disability (LD) in the 7<sup>th</sup> and 8<sup>th</sup> grade. Sixty participants were recruited for the study. Among them, 50 participants represented typically developing adolescents, serving as the control group, while the remaining 10 participants constituted the clinical group of adolescents with LD. The participants were evenly distributed across the 7<sup>th</sup> and 8<sup>th</sup> grades, ensuring a balanced representation in each grade and group. The tasks used to assess listening comprehension included Receptive Vocabulary, Syntactic Knowledge, Recalling Sentences, Comprehension of Spoken Paragraph.

Descriptive statistics was used to compute the mean, median, standard deviation and interquartile ranges for typically developing adolescents and adolescents with learning disability. Shapiro -Wilk's test was administered to check for normality, and the results indicated that the data did not follow normal distribution ( $p < 0.05$ ). Non-parametric tests were carried out to compare the performance of typically developing adolescents and adolescents with learning disability between the two grades on different tasks of listening comprehension.

The results of the study are described under the following sections:

- 4.1 Performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension.

4.2 Performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension.

4.3 Comparison between typically developing adolescents and those with LD on listening comprehension tasks.

***4.1 Performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension***

Descriptive statistics was used to compute means, medians, standard deviations (SD) and interquartile ranges for the scores obtained by participants in the control group on each of the four tasks of listening comprehension namely receptive vocabulary (RV), syntactic knowledge (SK), recalling sentences (RS) and comprehension of spoken paragraph (CP). As the total scores of each task were different, the scores obtained by participants in each task as well as the overall total score were converted into percentage.

The results of descriptive statistics for the typically developing adolescents in the two grades and four tasks are presented separately for males and females in Table 4.1.1. From Table 4.1.1, it may be observed that the scores obtained by participants in 8<sup>th</sup> grade was higher than that of 7<sup>th</sup> grade on each of the tasks. Further, scores of males were slightly higher than that of females in both the grades.

**Table 4.1.1**

*Means, Medians, Standard Deviations (SD) and Interquartile ranges (IQR) of the scores (in percentages) obtained by typically developing adolescent males and females on tasks of listening comprehension*

<b>Grade</b>	<b>Tasks</b>	<b>Gender</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>IQR</b>	
<b>7<sup>th</sup> grade</b>	RV	Male	74.35	75.00	4.45	6.25	
		Female	72.22	72.91	6.72	11.46	
	SK	Male	53.03	52.63	16.42	18.42	
		Female	52.19	52.63	14.79	19.42	
	RS	Male	63.24	61.72	14.37	12.96	
		Female	59.46	59.25	10.61	7.10	
	CP	Male	56.92	53.33	19.17	30.00	
		Female	54.44	53.33	17.01	25.00	
	TLC	Male	63.08	60.43	12.18	7.55	
		Female	60.13	59.71	7.61	6.83	
	<b>8<sup>th</sup> grade</b>	RV	Male	81.25	81.25	8.61	10.42
			Female	78.52	79.16	5.85	8.33
SK		Male	68.85	68.42	12.58	10.53	
		Female	63.96	63.15	10.27	21.05	
CP		Male	72.32	74.69	10.50	17.90	
		Female	69.80	64.19	12.36	17.90	
RS		Male	87.77	90.00	12.00	25.00	
		Female	81.53	80.00	10.23	16.67	
TLC		Male	75.06	74.82	8.27	13.31	
		Female	71.77	68.34	9.64	16.67	

\*Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR- Interquartile range, TLC- Total score of listening comprehension

Mann-Whitney U Test was administered to compare the scores between males and females in each grade and task of listening comprehension. The results, presented

in Table 4.1.2, revealed no significant difference between genders ( $p > 0.05$ ) for any of the listening comprehension task in both the grades. Thus, the gender wise data was combined for further analyses.

**Table 4.1.2**

*Results of Mann-Whitney U test comparing scores between males and females in each grade and task of listening comprehension*

Tasks	Male		Female	
	Z	p value	Z	p value
RV	0.782	0.434	0.833	0.405
SK	0.111	0.912	0.801	0.423
RS	0.737	0.461	0.872	0.383
CP	0.247	0.805	1.380	0.168
TLC	0.327	0.744	1.171	0.242

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

**Table 4.1.3**

*Means, Medians, Standard Deviations (SD) and Interquartile ranges (IQR) of the scores (in percentages) obtained by typically developing adolescents on listening comprehension tasks*

Tasks	Mean		SD		Median		IQR	
	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
RV	73.33	79.83	5.64	7.28	75.00	79.6	6.25	8.33
SK	52.63	66.31	15.34	11.47	53.63	68.2	18.42	18.42
RS	61.43	71.01	12.59	11.34	61.72	67.0	9.88	19.14
CP	55.73	84.53	17.83	11.33	53.33	86.6	26.67	20.00
TLC	61.66	73.35	10.15	8.98	59.71	72.6	6.12	15.11

\*Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR-Interquartile range, TLC- Total score of listening comprehension

The means, medians, standard deviations and interquartile ranges of the scores obtained by typically developing adolescents in grades 7 and 8 on different tasks of listening comprehension are presented in Table 4.1.3. As observed in table 4.1.3, typically developing adolescents in 8<sup>th</sup> grade (Mean= 73.35, SD=8.98) obtained higher total scores on tasks of listening comprehension compared to that of 7<sup>th</sup> grade (Mean= 61.66, SD=10.15). A similar trend was observed for each of the four tasks of listening comprehension, with higher scores for participants in 8<sup>th</sup> grade compared to 7<sup>th</sup> grade. It was also observed that both grades of participants obtained lower scores on the task of Syntactic Knowledge compared to other tasks. Examination of normality using Shapiro Wilk test to assess distribution of the combined data revealed non-normality ( $p < 0.05$ ) and hence, non-parametric tests were used for analyses.

Mann-Whitney U test was used to compare the scores between participants in the two grades (grade 7 and grade 8) on each of the four tasks of listening comprehension and also the total score obtained. The results of Mann-Whitney U test (as given in Table 4.1.4) showed that there was a significant difference between 7<sup>th</sup> and 8<sup>th</sup> grade for all the tasks of listening comprehension as well as the total scores. The median scores (in percentage) obtained by typically developing adolescents in the two grades on various tasks of listening comprehension are depicted in figure 4.1.

**Table 4.1.4**

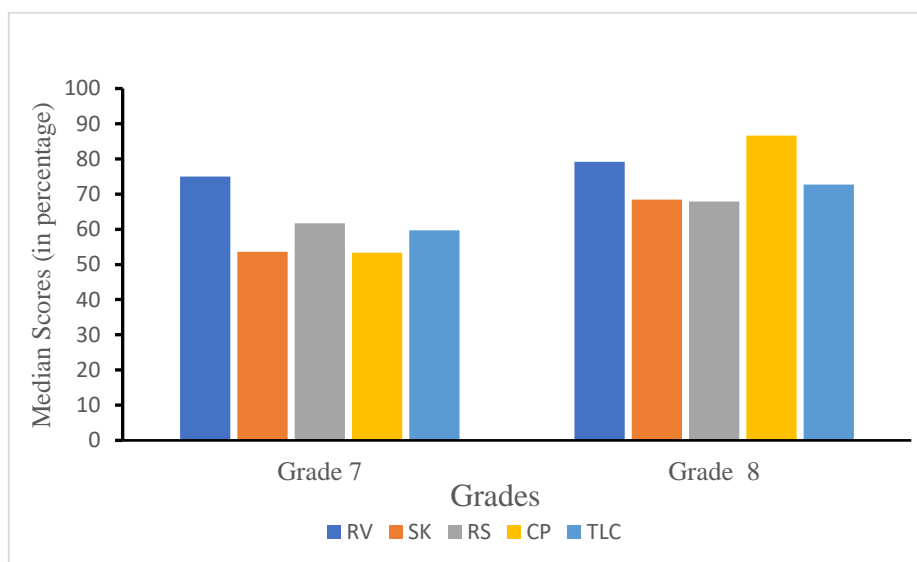
*Results of Mann-Whitney comparing the scores of typically developing adolescents in 7<sup>th</sup> and 8<sup>th</sup> grade on various tasks of listening comprehension*

<b>Task</b>	<b> Z </b>	<b>p value</b>
RV	3.245	0.001
SK	3.807	0.000
RS	2.946	0.003
CP	4.905	0.000
TLC	4.533	0.000

\*Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

**Figure 4.1**

*Median scores (in percentage) of typically developing adolescents in grade 7 and 8 on various tasks of listening comprehension*



Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

Friedman's two-way analysis of variance was used to investigate the effect of task on listening comprehension abilities in typically developing adolescents within each



grade. Results of Friedman's two-way analysis of variance revealed a significant effect of task on listening comprehension scores both in 7<sup>th</sup> grade [ $\chi^2(3) = 33.955$ ,  $p = 0.000$ ] and 8<sup>th</sup> grade [ $\chi^2(3) = 43.870$ ,  $p = 0.000$ ].

Further comparisons between tasks were carried out using adjusted Bonferroni corrections. Results of pairwise comparisons in grade 7 indicated significant differences when Receptive Vocabulary is compared with other tasks, but not for any other pairs. On the other hand, similar pairwise comparisons in grade 8 revealed significant differences ( $p < 0.008$ ) between all tasks except between Syntactic Knowledge and Recalling Sentences and between Receptive Vocabulary and Comprehension of Spoken Paragraph. The results of pairwise comparisons using adjusted Bonferroni corrections in grades 7 and 8 are presented in Table 4.1.5.

**Table 4.1.5**

*Results of pairwise comparisons using adjusted Bonferroni's test for different tasks of listening comprehension in typically developing adolescents*

Tasks	7 <sup>th</sup> grade		8 <sup>th</sup> grade	
	Z	p value	Z	p value
CP-SK	1.369	1.000	5.696	1.000
CP-RS	1.150	1.000	4.710	0.006
CP-RV	4.163	0.000	1.424	0.000
SK-RV	5.532	0.000	4.272	0.000
RS-RV	3.012	0.016	3.286	0.927
SK-RS	2.520	0.071	0.986	0.000

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph

In summary, a significant effect of grade was observed on listening comprehension abilities of typically developing adolescents with higher scores obtained for participants in grade 8 compared to those in grade 7. Further, a significant effect of task was also observed in both the grades. Scores obtained by the participants in grade 7 were the least on Syntactic Knowledge followed by Comprehension of Spoken Paragraph, Recalling Sentences and Receptive Vocabulary. However, participants in grade 8 obtained lesser scores on Syntactic Knowledge followed by Recalling sentences and Receptive Vocabulary while the scores were highest for Comprehension of Spoken Paragraph.

#### ***4.2 Performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension***

Descriptive statistics was used to compute means, medians, standard deviations (SD) and interquartile ranges for the scores (in percentage) obtained by participants in the clinical group on each of the four tasks of listening comprehension. The results of descriptive statistics for adolescents with LD in the two grades and four tasks are presented in Table 4.2.1. From the table, it can be seen that adolescents with LD in 8<sup>th</sup> grade obtained higher total scores (Mean= 29.78, SD=3.32) on tasks of listening comprehension compared to that of 7<sup>th</sup> grade (Mean= 18.27, SD=3.28). The scores obtained on each of the four tasks of listening comprehension was also found to be higher for participants in grade 8 compared to those in grade 7. Further, participants in both grades had higher scores in Receptive Vocabulary task compared to the other tasks.

**Table 4.2.1**

*Means, Medians, Standard Deviations (SD) and Interquartile ranges (IQR) of the scores (in percentages) obtained by adolescents with LD on listening comprehension tasks*

Tasks	Mean		SD		Median		IQR	
	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
RV	40.00	45.83	7.56	7.79	37.50	45.83	14.58	12.50
SK	14.73	21.05	4.40	3.72	15.78	21.03	7.89	5.26
RS	13.82	27.90	3.07	4.66	13.58	25.92	5.56	8.64
CP	12.00	25.33	9.88	5.57	13.33	26.66	16.67	10.00
TLC	18.27	29.78	3.28	3.32	17.26	29.49	6.12	6.47

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR-Interquartile range, TLC- Total score of listening comprehension

Owing to the small sample size of the clinical group, non-parametric tests were carried out for further analyses. Mann-Whitney U test was used to compare the scores between participants with LD in the two grades (grade 7 and grade 8) on each of the four tasks of listening comprehension and also the total score. The results of Mann-Whitney U test, as given in Table 4.2.2, revealed significant differences between 7<sup>th</sup> and 8<sup>th</sup> grade for the total scores and individual tasks of Syntactic Knowledge, Recalling Sentences and Comprehension of Spoken Paragraph. However, no differences ( $p > 0.05$ ) were observed between the two grades of participants for the task of Receptive Vocabulary. The median scores (in percentage) obtained by adolescents with LD in the two grades on various tasks of listening comprehension are depicted in figure 4.2.

**Table 4.2.2**

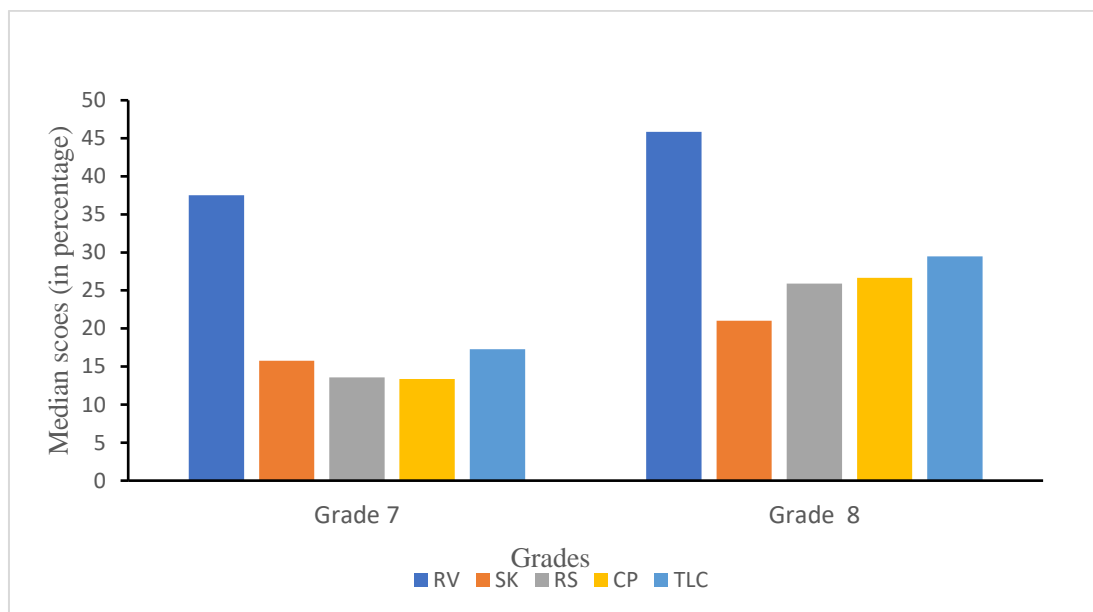
*Results of Mann-Whitney comparing the scores of adolescents with LD in 7<sup>th</sup> and 8<sup>th</sup> grade on various tasks of listening comprehension*

<b>Task</b>	<b> Z </b>	<b>p value</b>
RV	1.074	0.283
SK	1.972	0.049
RS	2.619	0.009
CP	2.022	0.043
TLC	2.611	0.009

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR-Interquartile range, TLC- Total score of listening comprehension

**Figure 4.2.**

*Median scores (in percentage) of adolescents with LD in grade 7 and 8 on various tasks of listening comprehension*



Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

Friedman's two-way analysis of variance was used to investigate the effect of task on listening comprehension abilities in adolescents with LD within each grade. Results of Friedman's two-way analysis of variance revealed a significant effect of task on listening comprehension scores of adolescents with LD both in 7<sup>th</sup> grade [ $\chi^2(3) = 9.720, p = 0.021$ ] and 8<sup>th</sup> grade [ $\chi^2(3) = 9.960, p = 0.019$ ].

Pairwise comparisons were carried out using adjusted Bonferroni corrections and the results revealed significant differences only between Receptive Vocabulary and Comprehension of Spoken Paragraphs in 7<sup>th</sup> grade and between Syntactic Knowledge and Receptive Vocabulary in grade 8. The results of pairwise comparisons using adjusted Bonferroni corrections in grades 7 and 8 are presented in Table 4.2.3.

**Table 4.2.3**

*Results of pairwise comparisons using adjusted Bonferroni's test for different tasks of listening comprehension in adolescents with LD*

Tasks	7 <sup>th</sup> grade		8 <sup>th</sup> grade	
	Z	p value	Z	p value
CP-SK	0.735	1.000	0.490	1.000
CP-RS	0.735	1.000	0.490	1.000
CP-RV	2.939	0.020	2.449	0.086
SK-RV	2.205	0.165	2.939	0.020
RS-RV	2.205	0.165	1.960	0.300
SK-RS	0.000	1.000	0.980	1.000

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph

In summary, a significant effect of grade was observed on listening comprehension abilities of adolescents with LD with higher scores obtained for participants in grade 8 compared to those in grade 7 except for Receptive Vocabulary. Further, a significant effect of task was also observed in both the grades. Participants with LD in both grades obtained higher scores on Receptive Vocabulary compared to all other tasks of listening comprehension.

#### ***4.3 Performance of typically developing adolescents and those with LD on listening comprehension tasks***

Descriptive statistics was used to compute means, medians, standard deviations (SD) and interquartile ranges for the scores (in percentage) obtained by participants in the control group and clinical group on each of the four tasks of listening comprehension. Data of the participants in each group were combined for grades. The results of descriptive statistics for the two group of participants across the four tasks of listening comprehension are presented in Table 4.3.1.

**Table 4.3.1**

*Means, Medians, Standard Deviations (SD) and Interquartile ranges (IQR) of the scores (in percentages) obtained by typically developing adolescents and adolescents with LD on tasks of listening comprehension*

Tasks	Mean		SD		Median		IQR	
	TDA	LD	TDA	LD	TDA	LD	TDA	LD
RV	76.58	42.91	7.86	7.23	45.83	75.00	16.67	12.50
SK	59.47	17.89	15.08	5.08	57.89	18.42	6.58	6.58
RS	66.22	20.86	12.81	8.30	62.96	20.98	17.59	14.20
CP	70.13	18.66	20.74	10.32	73.33	20.00	33.33	15.00
TLC	67.51	24.02	11.17	6.81	64.74	24.26	14.75	13.31

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR-Interquartile range, TLC- Total score of listening comprehension, TDA – typically developing adolescents

From the table 4.3.1, it can be seen that typically developing adolescents obtained higher total scores (Mean=67.51, SD=11.17) than those with LD (Mean=24.02, SD=6.81). The scores obtained on each of the four tasks of listening comprehension was also found to be higher for typically developing participants compared to those with LD. Further, participants in both groups had higher scores in Receptive Vocabulary task compared to other tasks.

Mann-Whitney U test was used to compare the scores of typically developing adolescents and adolescents with LD on each of the four tasks of listening comprehension as well as total score of listening comprehension. The results of Mann-Whitney U test (as given in Table 4.3.2) showed that there was a significant difference between the two groups for all the tasks of listening comprehension as well as the total scores.

**Table 4.3.2**

*Results of Mann-Whitney comparing the scores of typically developing adolescents and adolescents with LD on various tasks of listening comprehension*

<b>Task</b>	<b> Z </b>	<b>p value</b>
RV	5.007	0.000
SK	4.992	0.000
RS	4.966	0.000
CP	4.944	0.000
TLC	4.960	0.000

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, IQR-Interquartile range, TLC- Total score of listening comprehension

The scores obtained by typically developing adolescents and those with LD were further compared for the different tasks of listening comprehension within each grade separately. Results of Mann-Whitney U test showed there were significant differences ( $p < 0.001$ ) between the scores obtained by the two groups of participants in the total scores as well as the individual task scores in both grade 7 and grade 8 respectively. The results of Mann-Whitney test for comparison of scores within each grade are presented in the table 4.3.3. Comparison of the mean and median scores indicates that the scores obtained by adolescents with LD were lower than the control group on all tasks of listening comprehension both in grade 7 and grade 8. The median scores (in percentage) obtained by the two groups of participants in each grade on various tasks of listening comprehension are depicted in figure 4.3.



**Table 4.3.3**

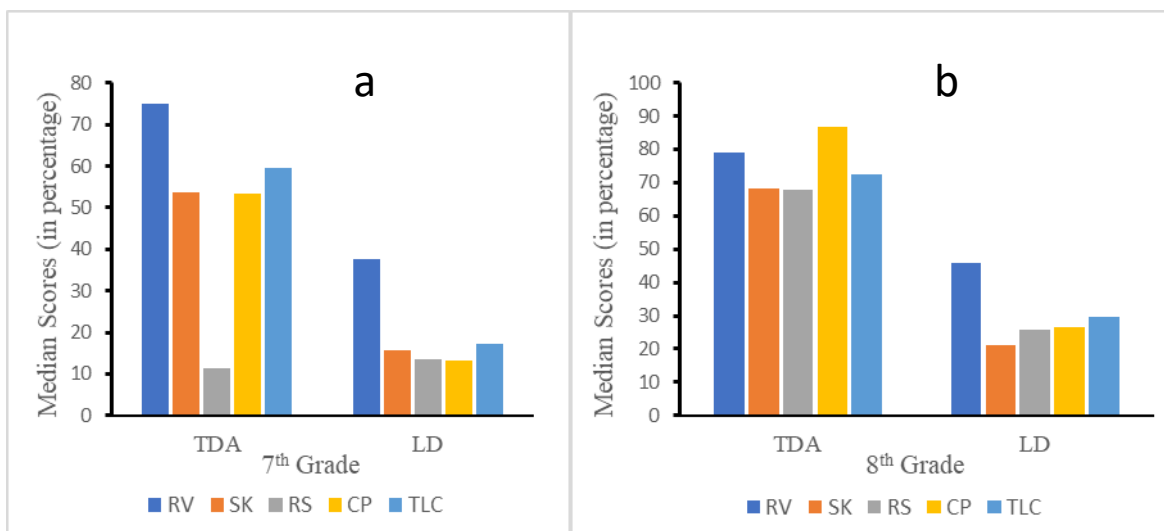
*Results of Mann-Whitney comparing between scores of typically developing adolescents and adolescents with LD in each grade on various tasks of listening comprehension*

Tasks	7 <sup>th</sup> grade		8 <sup>th</sup> grade	
	Z	p value	Z	p value
RV	3.532	0.000	3.521	0.000
SK	3.521	0.000	3.511	0.000
RS	3.486	0.000	3.481	0.000
CP	3.496	0.000	3.508	0.000
TLC	3.482	0.000	3.480	0.000

\* Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

**Figure 4.3**

*Median scores (in percentage) of typically developing adolescents (TDA) and adolescents with LD in a) Grade 7 and b) Grade 8 on various tasks of listening comprehension*



Note: RV- Receptive vocabulary, SK- Syntactic knowledge, RS- Recalling sentences, CP- Comprehension of spoken paragraph, TLC- Total score of listening comprehension

Therefore, participants in the control group scored higher than that of the clinical group on all four tasks of listening comprehension. This trend was observed in each of the two grades considered in the study. Further, participants in both groups had higher scores in Receptive Vocabulary task compared to other tasks.

## CHAPTER V

### DISCUSSION

The aim of the present study was to compare listening comprehension abilities of adolescents with learning disability (LD) and typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades. The findings of the present study are discussed as follows:

- 5.1 Performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension.
- 5.2 Performance of adolescents with learning disabilities in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension.
- 5.3 Performance of typically developing adolescents and those with learning disabilities on listening comprehension tasks.

#### **5.1 Performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension**

The findings of the present study revealed significant differences between the typically developing adolescents of the two grades, in each of the four tasks of listening comprehension. Typically developing adolescents in the 8<sup>th</sup> grade performed better than those in the 7<sup>th</sup> grade in all the tasks of listening comprehension. These findings indicate a developmental trend in listening comprehension abilities wherein adolescents in the higher grades perform better than those in the lower grades.

Gough & Tunmer (1986) explained in their simple view reading model that the comprehension of information was better in older children when compared to younger children while learning information through listening. Though the younger adolescents

actively engaged in tasks, their performance was poorer when compared to the older adolescents. The simple view model entails that better listening comprehension will involve the good comprehension of single words and sentences in a story in a developmental trend and helps to perform better in higher-order skills of language. The results of the present study are in consonance with earlier works supporting a developmental trend in comprehension abilities (Brand-Gruwel et al., 1998; Tzeng et al., 2005). Tzeng et al. (2005) reported that cognitive processing efficiency expands and their networks also seem to expand, hence an improvement in comprehension skills is observed with the development of older children. However, no differences were observed in the scores between males and females in each grade, indicating that the performance of typically developing adolescents was similar between the two genders on listening comprehension tasks.

Within-grade comparison for various tasks of listening comprehension showed that the adolescents in the 7<sup>th</sup> grade performed better on the tasks of receptive vocabulary task compared to the other tasks (syntactic knowledge, recalling sentences and comprehension of spoken paragraphs) of listening comprehension. On the other hand, participants in 8<sup>th</sup> grade performed better in the tasks of comprehension of spoken paragraphs followed by receptive vocabulary, recalling sentences and syntactic knowledge, in that order. The possible reason could be that while receptive vocabulary requires good precision and lexical quality of word knowledge (Perfetti, 2007), syntactic knowledge requires the higher skills of sentence structure and meaning. The better performance in receptive vocabulary might be due to the adequate prior knowledge of words being heard and the number of entries in the mental lexicon (Lepola et al., 2012; Perfetti, 2007).

Differences were observed when receptive vocabulary was compared with recalling sentences and comprehension of spoken paragraphs in adolescents in grade 7. These differences could possibly be attributed to the involvement of working memory, and thinking skills for tasks of recalling sentences and comprehension of spoken paragraphs thereby making it more complex than receptive vocabulary (Cain et al., 2004). Recalling sentences require higher order skills of constructive and integrative process of mental representation in working memory. It also involves pressure points where less malleable targets take priority to recall sentences (Catts et al., 2006; Perfetti, 2007). Older children are better equipped with strategies like predicting, inferencing, questioning and summarising which further aids in better comprehension abilities (Brand-Gruwel et al., 1998). This could explain the better performance of adolescents in grade 8 on the task of comprehension of spoken paragraphs compared to other tasks.

Poor performance of adolescents in both grades could be attributed to inadequate syntactic awareness and higher-order skills in language (Nation & Snowling, 2000). Tasks of syntactic knowledge also require knowledge of subject-verb order (SVO) and ability to relate words within and across sentences.

## **5.2 Performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on various tasks of listening comprehension**

The findings of the present study revealed that the overall total score of listening comprehension was better in 8<sup>th</sup> grade adolescents with LD when compared to the 7<sup>th</sup> grade adolescents. Similar trend was also observed for each of the four tasks of listening comprehension. These findings indicate a developmental trend in listening comprehension abilities in adolescents with LD, similar to that of typically developing

peers. Comparison between different tasks in each of the two grades showed that the performance on receptive vocabulary task was better when compared to other tasks of listening comprehension.

Receptive vocabulary requires only individual word decoding but syntactic knowledge requires comprehension of the overall sequence of written and/or spoken utterance of internal linguistic structure (Tong et al., 2014). Syntactic knowledge also demands an understanding of grammatical rules and sentence construction (Tunmer & Hoover, 1993). Similar to that observed in typically developing adolescents, the possible reason could be that receptive vocabulary requires good precision and lexical quality of word knowledge (Perfetti, 2007) compared to the other tasks where higher levels of cognitive and linguistic processes are involved. In addition, a deficit in language skills could hinder performance on tasks of syntactic knowledge and comprehension of spoken paragraphs (Asberg, 2010). Poor metalinguistic abilities in children with LD could also be attributed to their lower performance on these tasks. Tong et al. (2014) also reported that children with poor syntactic awareness showed difficulty in listening and reading.

### **5.3 Performance of typically developing adolescents and those with LD on listening comprehension tasks**

The findings of the present study indicated that the performance of adolescents with LD was poorer when compared to the typically developing adolescents on each of the four tasks of listening comprehension. This was true for both grade 7 and grade 8. There is ample evidence in the literature suggesting that typically developing children performed better than those with LD on listening comprehension tasks (Cain et al,

2004). The findings of this study add support to the fact that listening comprehension deficits in children with LD persist well into their adolescence.

Poor performance of adolescents with LD in the task of recalling sentences could be due to poor precision and flexibility of working memory and acquired knowledge in this group (Keenan et al., 2008). The contribution of working memory associated with language skills in recalling sentences is well established (Kim et al., 2016). Further, significant differences between children with LD and typically developing children are reported on story and sentence structure recall (Copmann & Griffith, 1994). The present study reported a similar trend for adolescents with LD emphasizing the fact that these difficulties continue to persist into adolescence.

It has been reported that adolescents with LD show a similar developmental trend with typically developing adolescents in comprehension skills until they begin with more complex words in longer and more difficult text. Comprehension deficit was not identified until the primary grades coincided the shifts from 'learning to read' to 'reading to learn' (Resnick & Weaver, 2013). The prevalence of poor comprehension across grades increases when they master higher-order skills of language (Catts et al., 2006). It may be appropriate to assume that higher order language skills develop tremendously during the adolescent period and a deficit in this domain could further exaggerate the comprehension difficulties already present in LD.

Detailed observation of the domain wise scores in the two groups of participants indicate that the scores of typically developing adolescents did not greatly differ between the tasks. In contrast, there was a vast difference in adolescents with LD in

both grades. The LD group had relatively better scores on receptive vocabulary compared to other tasks in which the performance was very poor. As emphasized earlier, tasks of syntactic knowledge, recalling sentences and comprehension of spoken paragraphs are more complex in nature compared to receptive vocabulary (Asberg, 2010; Catts et al., 2006; Gathercole & Baddeley, 1990; Keenan et al., 2008; Perfetti, 2007; Tunmer & Hoover, 1993).

In conclusion, it may be observed that there is a developmental trend in listening comprehension skills of both typically developing adolescents and adolescents with LD, especially as the cognitive and linguistic complexity of tasks increases. However, adolescents with LD performed poorer than typically developing peers on all tasks of listening comprehension irrespective of the difficulty levels. These findings emphasize the importance of listening skills and their contribution to language and literacy in adolescents. Further, the findings clearly indicate the presence of listening comprehension deficits in adolescents with LD which could be persisting from early childhood. It may thus be necessary to consider listening comprehension abilities in both assessment and management protocols of adolescents with LD.



## CHAPTER VI

### SUMMARY AND CONCLUSIONS

The current study aimed to understand the listening comprehension abilities in adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades. The specific objectives of the study were:

- To study the performance of typically developing adolescents in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension.
- To study the performance of adolescents with LD in the 7<sup>th</sup> and 8<sup>th</sup> grades on different tasks of listening comprehension.
- To study the performance of typically developing adolescents and those with LD on listening comprehension tasks.

The participants were classified into two groups: typically developing adolescents (Control group) and adolescents with LD (Clinical group). The typically developing adolescent group consisted of 50 participants, 25 each from the grades 7 and 8. The clinical group consisted of 10 adolescents with LD from the same grades. The listening comprehension abilities of the participants were assessed through four tasks namely Receptive Vocabulary, Syntactic Knowledge, Recalling Sentences and Comprehension of Spoken Paragraphs.

The results indicated a significant effect of grade on listening comprehension abilities in both the groups of participants i.e. participants in grade 8 performed better than those in grade 7 in both typically developing and LD groups. Further, a significant effect of task was also observed in both the grades in each group. The typically developing adolescents in Grade 7 obtained higher scores on tasks of receptive

vocabulary compared to the other tasks of listening comprehension. On the other hand, participants in 8<sup>th</sup> grade obtained higher scores in comprehension of spoken paragraphs followed by receptive vocabulary, recalling sentences and syntactic knowledge, in that order. Adolescents with LD in both grades obtained higher scores in receptive vocabulary task compared to other tasks in which the scores were very low. Significant differences were observed between the two groups of participants on each of the four tasks of listening comprehension.

A developmental trend was observed in the listening comprehension skills of both typically developing adolescents and adolescents with LD with increase in the complexity of tasks. However, adolescents with LD performed poorer than typically developing peers on all tasks of listening comprehension irrespective of the difficulty levels. Hence, it can be assumed that higher order language skills develop tremendously during the adolescent period and a deficit in this domain could further exaggerate the comprehension difficulties already present in LD.

In conclusion, this study provides valuable evidence on the differences in listening comprehension abilities between typically developing adolescents and adolescents with LD. The findings highlight the importance of early identification of listening comprehension difficulties in adolescents with LD and targeted interventions to support their language skills and academic achievements.

### **6.1 Implications of the study**

- The current study provides an insight into the listening comprehension abilities in adolescents with and without LD.
- The tasks used in the study to assess listening comprehension can be included in the assessment and intervention protocols of adolescents with LD.

### **6.2 Limitations of the study**

- The sample size of the clinical group was relatively small, which may limit the generalizability of the findings.
- The participants of the study included adolescents only from 7<sup>th</sup> and 8<sup>th</sup> grades, which do not cover the complete range of the adolescence period.

### **6.3 Future Research**

- Future research with larger and more diverse samples with respect to subtypes of LD would provide more robust insights into the listening abilities of this population.
- Field testing on a larger group of adolescents with LD across a wider range of grades could also be carried out.

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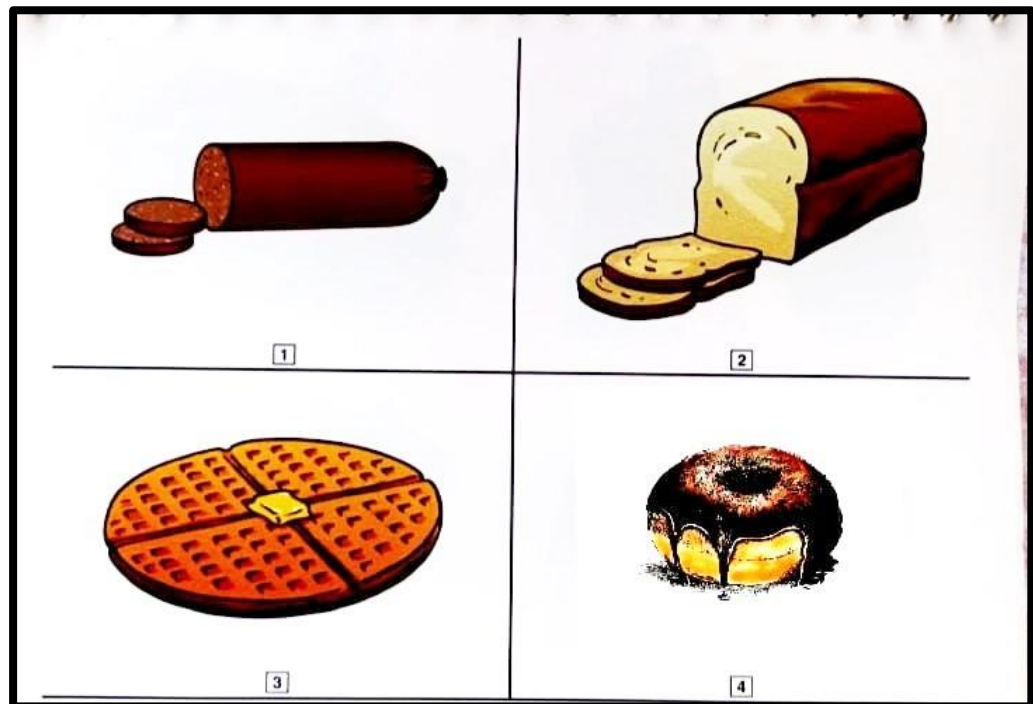
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## APPENDIX I

## Receptive Vocabulary - Stimuli modified following content validation

Stimulus Number – 122 (in the original test), Target – Pastry

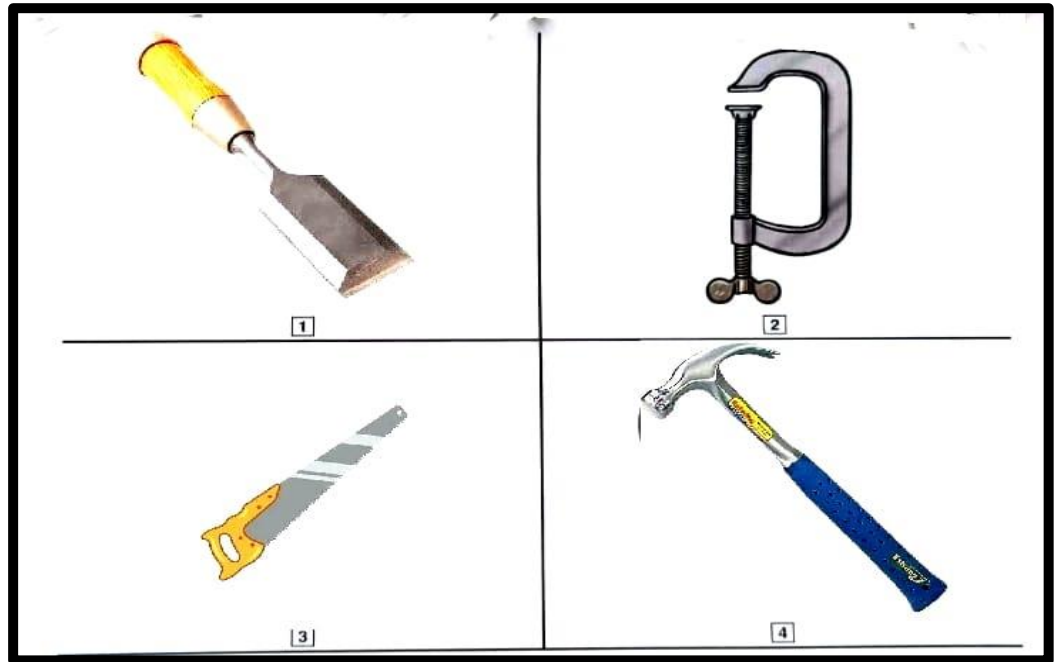


Stimulus number- 131,

Target- Trumpet



Stimuli Number- 143, Target- Clamp



Stimuli Number- 144, Target- Tattered

