

**FORMATTING LINGUISTIC PROFILES  
OF DYSLEXIC CHILDREN: CASE  
STUDIES IN DELHI**

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in partial fulfilment of the requirements for the  
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**MASTER OF PHILOSOPHY**

*By*  
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## CERTIFICATE

This is to certify that the dissertation entitled "**FORMATTING LINGUISTIC PROFILES OF DYSLEXIC CHILDREN: CASE STUDY IN DELHI**", submitted by **Susan Mathew**, in partial fulfillment of the requirements of the award of the degree of **Master of Philosophy** of the University, is to the best of my knowledge an original work and may be placed before the examiners for evaluation.



**Prof. R. S. Gupta**  
(Chairperson)



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(Supervisor)

## **DECLARATION BY THE CANDIDATE**

This dissertation entitled “**FORMATTING LINGUISTIC PROFILES OF DYSLEXIC CHILDREN: CASE STUDIES IN DELHI**”, submitted by me for the award of the degree of Master of Philosophy is an original work and has not been submitted so far in part or in full, for any other degree or diploma of any University.



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**TO MUMMY AND PAPA...**

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***CHAPTER ONE***  
***INTRODUCTION AND BACKGROUND STUDIES***

Dyslexia is a learning disability that hinders the acquisition of learning skills. This problem with managing verbal codes in memory is neurologically based and tends to run in families. Other symbolic systems, such as mathematics and musical notation, can also be affected. Dyslexia can occur at any level of intellectual ability. It can accompany, but is not a result of lack of motivation, emotional disturbances, sensory impairment or meager opportunities

Dyslexia is a term loosely applied to reading disabilities. Specific definitions of dyslexia vary with disciplines. Those in medicines define dyslexia as a condition resulting from neurological, maturational and genetic causes, while those in psychology relate to dyslexia on the basis of the specific reading problems evidenced and give no reference to causation. All disciplines agree (maybe) that dyslexia is evidenced by persons of otherwise normal intellectual capacity who have not learned to read despite exposure to adequate instructions.

Dyslexia or specific learning disability, as it is often referred to as, comes to fore only when the child begins to have problems with reading language. Reading follows learning to speak or talk, rather for reading to happen the child must have mastered the art of talking. This is so because reading is taught formally and the child must have a clear understanding of the sounds and must be able to distinguish these sounds clearly, only then will he be form a connection between graphical manifestation of the sound and the sound itself. It is clear that the process of language acquisition plays an important role in understanding how a child normally proceeds through literacy.

It is of further importance to this present study because we could better understand language acquisition in language/learning – disordered children if we have an understanding of how normal children acquire language. Therefore, before we

discuss dyslexia and its causes in detail we must first take a look at the processes involved in child language acquisition.

The child before he could talk must familiarize himself with an enormously complex linguistic system. The fact that language is arbitrary makes it all the more difficult, as the meanings of words are often difficult to discover. Once the child discovers what certain words mean, he then has to figure out how could these words, of which he has managed to discover the meaning, be combined to form sentences. However, that's not the end of it. Once the child has discovered the meanings of the sentences that he is familiar with, he now has to produce sentences he has never heard before. When one considers the huge amount of information that the child needs to gather, language acquisitions seems to be an impossible task. Yet, surprisingly, all children learn to talk, and by five years of age they do so with a great deal of skill. The question then arises how?

Several theoretical perspectives have been adopted in order to explain how a child acquires language. The fact that the term 'acquisition' is often used to refer to the child's learning of his native language might suggests that at least some theorists have seen the processes involved in learning to talk as being different in some way from those involved in other kinds of learning.

One extreme view of language learning (here learning language is no different from other kinds of learning) assumes that the child is merely a passive observer in the process of acquisition, which is a complex form of conditioning of the child's utterances until they finally become like those used by adults. The view, in complete opposition to this, proposes that a child can acquire language only if born already equipped with very specific linguistic skills. Some of the alternative theoretical positions are discussed in detail.

## **SKINNER'S VIEW**

In his book '*Verbal Behaviour*' (published in 1957), Skinner proposed that language learning should be seen as a conditioning process. According to his claim, children learned language as a result of the reinforcement provided by their parents. This reinforcement which was aimed at 'shaping' the initially incorrect utterances of the children so as to eventually make them 'adult like'.

Harris and Coltheart (1986) argue in favor of Skinner, saying that his attempt to explain language acquisition was unsuccessful because it did not satisfactorily account for the child's rapid acquisition of the skills necessary to produce and understand any sentence in a language.

## **CHOMSKY'S VIEW**

Chomsky attacks Skinner's use of a conditioning paradigm to explain language acquisition in his critique of '*Verbal Behavior*', which was published in 1959. He argued that Skinner's conditioning process did not explain how speakers of a language learn to produce and understand novel utterances (ones which they had never heard before). He argued that in almost all the important processes of child language acquisition the child needed to be actively involved. He says that the child has to master the complex linguistic systems on the basis of incomplete and inaccurate information on his own as language is only taught in the most marginal sense.

Since all children do acquire language, Chomsky argued that some innate mechanism must insure that language develops in spite of these difficulties. This mechanism with the help of which a child can produce and understand any sentence in a language he called the linguistic competence. According to Chomsky

language is a set of rules, and it is these rules that the child will use to produce sentences of his own.

He said that language is pre-programmed, and is acquired as the result of motivation and not learning. His theoretical perspective was of importance to the psycholinguists because it stated what kinds of patterns should be considered as evidence that language acquisition is an active process of rule learning.

### **PIAGET'S VIEW**

Piaget discussed the place of language in cognitive development. He said language could not be isolated from cognitive development, which he considers as preparing way for linguistic development. According to him, language appeared at a stage when the child has familiarized himself with his surroundings through a thorough exploration.

With language, the child is able to represent every event linguistically well beyond the present time and space. For Piaget, language develops only after the child has developed the capacity for symbolic action and symbolic representation. Piaget argues that child language appears neither as the result of conditioning process nor as the result of maturation of an innate neurophysiological programme, but through the completion of the processes involved in sensori-motor development.

'If language does have its roots in the early sensori-motor experiences of the child, and later language development and cognitive development go hand in hand, it does not necessarily follow that Chomsky's view of language as a rule-discovering process is incorrect. The reason being that there is two separate issues are involved here. One is concerned with possible differences between linguistic knowledge

and other kinds of knowledge which the child has available' and whether such linguistic knowledge is innate or acquired. The second issue is concerned with the way in which the child goes about language learning. These two issues are central to the experimental studies of child language (Harris and Coltheart, 1986).'

Some of the recent findings in the field of normal language acquisition are discussed below:

Studies on language acquisition, in the last quarter century have been through a number of phases: first being the age of language universals in the 1960's; the next to follow was the 'cognitive revolution' phase of the 1970's; and lastly the modified universals era of the 1980's.

Chomsky (1959,1965), initiated the first phase and suggested that children are born with an innate language acquisition device (LAD). Many other scholars (Brown, Cazden, and Bellugi 1968) and (McNeil 1970) also worked on same lines. But Chomsky and his supporters did not succeed in finding firm language universals. As a result, many psychologists proposed that 'general cognitive mechanisms might account for acquisition, (Donaldson, 1978). One trend seen in the literature on normal language development in past several years is an increased interest in young children's comprehension skills. According to Huttenlocher's (1974) classic report of early language comprehension, children as young as nine months of age respond appropriately to words and short phrases.

Chapman (1978) and Leonard (1984) identified several strategies that young children could use to give the impression that they understand more than they do. More recently, Oviatt (1980) developed a method where the child is exposed to previously unknown objects and action names. Clinical implications of the work of Chapman (1978) and Oviatt (1980) are substantial. With regards to the former, it seems that there are several factors unrelated to lexical comprehension per se

that might allow a child to respond as if he or she understands the word being tested.

Oviatt (1980) procedure is important for clinical application. If the goal of clinical studies were to determine a language-disordered child's readiness for comprehension training, then Oviatt's procedures would seem to be most appropriate to use.

The recent findings concerning young children's word productions and the factors influencing them and could offer some new considerations for clinical management. If the language-disordered children are found to show the same phonological selection and avoidance tendencies seen in young normally developing children, it would appear that an additional factor would have to be considered while selecting the words to be included in lexical training.

Many aspects of language acquisition take place well after the child has entered school, namely the development of the linguistic skill of reading. The process of learning to read is very different from the acquisition of spoken language. Very rarely, is the child taught to speak in their native tongue but in cases of reading, it has to be explicitly taught and the pace depends upon the person who is teaching the child to read.

Let us imagine a child who is at the earliest stage of learning to read and reads the word 'cat' when shown in printed form. Harris and Coltheart (1986) suggest that the child will use at least two different mental processes to transform the orthographic representation 'cat' into the phonological representation 'cat'. The first procedure in the context of reading is called the '*Whole-Word*' procedure or the '*Direct*' procedure. This depends upon the child having previously learned a direct correspondence between the letter string 'cat' and the spoken representation

'cat'. The child will have developed learned correspondence which allow the particular word to be found in the store of spoken words which corresponds to the printed form the child is looking at.

Another possibility that they propose is that the child can use a system of *spellings-to-sound rule: a phonics procedure*. Perhaps the child knows that 'c' is pronounced as /k/, 'a' is pronounced as /æ/ and 't' is pronounced as /t/, and by applying these rules to the 'cat', the child can transform it into the spoken form 'cat'. Much of the research on learning to read takes the form of attempting to investigate the relative contribution made by these two general procedures in the early stages of reading.

Most current models of skilled adult reading are 'dual-route' models, i.e. they postulate that, the skilled reader has at his disposal at least two different procedures for converting print to speech. Procedures, which correspond to the direct procedure, are more often called lexical and those<sup>2</sup> that correspond to the phonics procedure is called non-lexical procedures.

Using direct method only, the child will acquire not general but word specific knowledge, and it will not help when the child tries to read new words, because he is not learning about the relationship of letters to sound. A child who reads with the help of direct procedure could not make this kind of use of existing knowledge of spoken language, because the child could not convert an unfamiliar letter string to its spoken form, even if this spoken form is a familiar word to the child.

With regards to phonic procedures, the problem is that learning of correspondence between letters and sounds is more abstract task for a young child than the learning of correspondence between a whole printed word and its spoken form. For a number of the elementary sounds of some language, the letter – sound rules

cannot be taught in an explicit way. Another difficulty for the phonic procedure is the irregularity in the spellings of English language.

Therefore, at some stage of learning to read, any child who is going to become a normally skilled reader will have to learn to use the direct procedure, and at some stage will have to learn to use the phonics procedure.

The sketch of how reading is acquired is discussed based upon ideas proposed by Marsh, Friedman, Welch, and Desberg (1981), Seymour and McGregor (1984), and Frith (1985). Harris and Coltheart have proposed that children proceed through four phases (based on ideas proposed by Marsh, Friedman, Welch, and Desberg) as they progress from being entirely unable to read to possessing a normal adult level skilled reading:

**1. *THE SIGHT-VOCABULARY PHASE:***

On an average, a child's first phase of learning to read emerges between four to five years of age. In this stage, there are small sets of words – a slight vocabulary –, which the child can read aloud. The child uses the direct procedure. The ability to read this small group of words may have been acquired through teaching or acquired spontaneously.

**2. *THE DISCRIMINATION-NET PHASE:***

Marsh (1981) and Seymour and Elder (1985) demonstrated the most characteristic reading behavior in the second phase. The term '*discriminating-net phase*' is used to describe the phase in which reading aloud takes the form of selecting from among the set of words that most closely match the letter string that has been read. The child behaves as if the task of reading single

words is the task of deciding which of the word in the child's reading vocabulary is the item which has been presented. This item maybe the one outside this vocabulary, but the child ignores all these possibilities. This phase assumes that the child knows from among the spoken words familiar to him, which are the ones he has been taught and which are the ones he has not been. Though unreasonable, it appears to be true.

The evidence provided by Seymour and Elder (1985) strongly support the view that children of five or six years of age at the end of their first year of reading tuition, read single words aloud by using salient features of presented letter strings to select the most plausible response from amongst a specific set of words. The set being the collection of words, they know they have been taught to read.

### ***3. THE PHONOLOGICAL-RECODING PHASE:***

In the second phase it will become more and more difficult for the child to identify fragmentary features of word, which distinguishes one from the other words in the reading vocabulary, because the vocabulary is expanding. Before this phase, the child is completely unable to read aloud printed non-words, such as, vud, vib, because the child still does not use the information about mapping from individual letters to individual sounds when reading aloud. However, eventually he reading words, which have never been used, in his reading instructions, indicating that the child has now transitioned into the phonological recoding phase where he would apply phonic rules, in addition to a direct procedure.

Success of a child in learning to read will be greater if before beginning to read they understand that spoken form of words can be broken down into individual

sounds which can then be represented by a letter. This knowledge assists learning to read because it helps the child to learn how to use the phonic procedures.

## ***2. THE ORTHOGRAPHIC PHASE:***

Phonic procedure has many disadvantages. First, the reader of English, who has till now relied upon the phonological recoding, will not be able to discriminate between one homophone and its mate -e.g., sail and sale – since the two words have identical phonological representation. The second disadvantage is that, although one may casually speak of learning procedures for converting unfamiliar print to speech, no procedure exists which can perform the conversion correctly for all the words in English.

Doctor and Coltheart (1980) proposed that progress from being an effective beginning reader towards being a skilled reader involved a progressive increase in reliance upon orthographic (visual) recoding. This means that the transition from a phonological recoding phase (reliance on sound) to an orthographic stage (reliance on spelling), which the dominant representation used for reading, took place over the period of six years of age to ten years.

We will now discuss how a language disordered child proceeds through the four phases of the process of learning to read.

### ***1. SIGHT VOCABULARY PHASE:***

At the very beginning of reading acquisition, children can often read a small set of familiar words, which they have learned to read in the rote fashion involving one-to-one association between particular orthographic patterns and their spoken equivalents. Frith found that whether a child is good or bad at rote learning, visual-

to-word association does not influence how rapidly progress has been made in learning to read by the age of eight. The studies conducted by Lynn and Fowler showed that this phase is not necessarily the initial stage in the normal course of learning to read, because if it was then one expects the children to go on to acquire further reading abilities earlier than children normally do. But this did not happen.

## ***2. THE DISCRIMINATION-NET PHASE:***

Seymour and MacGregor (1984) reported a case of a reader in whom the analytic processing appeared to be disturbed. The subject could perform competently provided the words were presented in normal orientation, but was abnormally slow when the words were presented vertically or in a zigzag format.

## ***3. THE PHONOLOGICAL-RECODING PHASE:***

A child who is poor at using letter sound rules will experience reading difficulties at this stage even though he would have been able to negotiate the first and the second of reading acquisition without any difficulty. Temple (1984) and Temple & Marshall (1983) have described cases of developmental dyslexia, which takes this form.

Seymour and MacGregor (1984) observed that a necessary preliminary to the attainment of fully skilled reading is a successful negotiation of the phonological-recoding phase. To be successful in this phase the child must be competent at using letter sound rules for recoding from print to phonology. An impairment of the ability to use these rules make it very difficult to progress from a reading age of 11 years or so to a normal adult level of reading skills.

#### **4. THE ORTHOGRAPHIC PHASE:**

The phonological-recoding phase cannot be the ultimate one as far as reading acquisition is concerned because English language contains substantial numbers of words which cannot be pronounced or read following the letter to sound rule strategy. A child who is unable to make this transition will face problems in reading those words for which the orthographic phase is necessary.

Learning to talk and learning to read involve the acquisition of a variety of complex skills. Therefore it is not surprising that not all the children acquire language to the normal degree. Children, who acquire language more slowly or less completely than the majority, are said to be exhibiting a developmental language disorder. Children who are slow to acquire language are different from adults who have acquired language normally, but then suffer some form of brain injury, which makes them unable to use language normally. Language disorders of this kind are known as acquired disorders. Though in this study we would mainly be dealing with developmental language disorders manifested in reading and spelling.

Spelling acquisition like reading acquisition also appears to involve a series of phases. Frith (1980, 1984, and 1985) suggests that, before children will generate anything resembling proper spelling, they would first need to develop the ability of phonological segmentation-the ability to analyze spoken words into constituent sounds.

Using this ability, the children can use sound-letter rules to write down words they hear. For English these cannot be applied because English words cannot be spelled correctly using the sound-letter rules. After the phonological phase of spelling acquisition follows the second phase in which spelling is accomplished by retrieving word-specific orthographic information from a store of learnt spelling of words and is referred to as the orthographic phase of spelling acquisition. If a

child is poor at the processes required for this orthographic phase, then phonological errors will persist well beyond the age at which they ought to have disappeared.

We have discussed how normal child language acquisition takes place. We will proceed to discuss how the studies that have been carried out in the past in the field of language acquisition in language/learning-disordered children, help us frame our understanding of how school-aged language/learning-disordered children perform in the areas of phonetics, morphology, syntax, pragmatics, discourse, semantics etc.

The current emphasis on pragmatic aspects of communication has resulted in an investigative trend that has important implications for the structure and context of early language intervention. Studies of child language acquisition have been broadened to include an examination of communication rather than purely linguistic competence. Many early investigations of child language, being largely influenced by Chomsky's works (1957, 1965) focused primarily on the acquisition of linguistic competence (Braine, 1963; Brown, Cazden & Bellugi, 1973; Brown & Hanlon, 1970).

The influence of such investigations has been manifested in a variety of syntactically based early intervention parameters (e.g. Miller & Yoder, 1972). Recently a pragmatic view of communication has become important. Specialists concerned with normal as well as disordered child language have come to realize that linguistic competence is only one part of language acquisition (Bates, 1976; Hymes, 1971; Lakoff, 1972; Rees, 1978). As a result of the shift in focus of child language studies from linguistics to communicative competence, it generally became accepted that linguistic structures couldn't be studied without reference to context in which communication normally occurs.

Communicative competence can generally be regarded as the ability to convey effectively and efficiently an intended message to a receiver. This ability not only requires the knowledge of the conventional communicative code, but also the knowledge that is socially appropriate. The areas that have received attention while researchers attempted to describe the acquisition of communicative competence include communication prior to speech, analyses of the contexts and functions of communications, the role of environmental communicative input, and children's observance of socially appropriate communicative conventions.

An important aspect of language-disordered children's communicative competence pertains to their conversational functioning beyond the level of expressing functions. These aspects of communication are frequently referred to as discourse abilities. These are (1) initiating and sustaining a communicative interaction, (2) considering a listener's perspective when encoding messages, and (3) responding to listener's feedback.

From the research conducted so far, it would appear that language – disordered children recognize the need to clarify ambiguous message, however, the degree to which their clarifications are successful has yet to be determined. Hence, the ability to clarify an ambiguous utterance successfully also merits consideration for potential treatment content (Wilcox, 1984)

Several recent trends in the child language literature, e.g. the relationship of prespeech communication to the later verbal communication, the role of environmental communicative input in children's language acquisition, and young children's knowledge with respect to socially appropriate communicative conventions, have important implications for preschool language disorders.

When language – disordered children enter elementary school, they often come to be associated with different labels: learning – disabled, language and learning – disabled, reading – disabled, or even dyslexic. It is not that language – disordered children radically change when they reach 6 or 7 years of age. Rather, their problem in processing and producing oral language make it difficult for them to acquire written language: the ability to read, spell, and write composition (Lerner, 1977).

It is not surprising that the United States Office of Education defines learning – disabled children as those with intact sensory functioning, normal psychosocial development, general cognitive abilities in the normal range, who demonstrate “ a disorder in one or more of the basic psychological process involved in understanding or using language, spoken or written” (USOE, 1977, p. 65083).

The semantic component of language refers to the meaning carried by words. As Fillmore (1971) pointed out, one’s knowledge of a word includes several components. Much like Webster’s, it includes information about the syntactic class to which the word belongs-noun, verb, etc., its primary referential meaning, and any alternate multiple meaning it may carry. The literature suggests that school-aged language disordered children seem to encounter difficulty processing and producing lexical items.

Studies comparing normal and language/learning-disabled children’s comprehension of items on experimental measure (Wiig & Semel, 1973; Wiig, Semel, & Crouse, 1973) indicate that the normal and language/learning – disabled subjects performed similarly on the Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965; Dunn & Dunn, 1981). Similarly, Semel and Wiig (1975) found no

Language Comprehension (AALC) (Foster, Giddan, & Stark, 1973). Both, the school – aged children did seem to differ from their normal counterparts in their comprehension of specific word categories.

School-aged language/learning-disabled youngsters appear to have particular difficulty comprehending words that express spatial, temporal, and kinship relations. Wiig & Semel (1973) compared the ability of matched normal and language/learning-disabled children to comprehend sentences that employed spatial, temporal, and kinship words, as well as passive construction and comparative form markers. They found that the language/learning-disabled children performed significantly lower than the normal children on each of these words and form categories. A close look at these categories reveals that they are composed of relational words. They do not refer to events, actions, or objects. These words refer to relationships between the objects and / or persons. The relational words required that the child keep two or more referent in mind, and it might be this aspect of lexical processing that is more difficult for language-disordered children.

Clinical descriptions of school-aged language/learning-disabled children (De Hirsh, Jansky, & Langford, 1966; Johnson & Myklebust, 1967; Wiig & Semel, 1976, 1980) have reported that some of these youngsters have difficulty retrieving or accessing words from their lexicon. In recent studies in this field, empirical support for these reports has appeared in the literature. Mattis, French, & Rapin's (1975) neuropsychological study compared the performance of reading-disabled or dyslexic children, brain-damaged dyslexics, and brain-damaged children with no reading deficits on a variety of cognitive and linguistic measures. They identified three subtypes of disorders that accounted for most of their subjects. The largest subtype demonstrated language deficits. These were characterized by

language comprehension problems, syntactic production deficits, poor speech sound discrimination problems and “anomia” or naming problems.

Similarly, Denckla’s (1978) retrospective study of dyslexic children seen by her clinic identified three subgroups or subtypes of reading-disabled children. Anomia, or naming problems, was a characteristic attributed to two of the three subgroup hat she identified. These studies support the idea that some language/learning-disabled youngsters have word retrieval problems.

Denckla (1972) studied the ability of dyslexic or reading-disabled, boys to name colors and pictured objects. She found that they only experienced color-naming difficulty under rapid and repetitive naming conditions, where they had been instructed to name the colors as quickly as possible. Later, Denckla and Rudel (1976) examined the rapid automatized naming (RAN) of matched dyslexic, normal, and non-dyslexic “low achieving” children between 7 and 12 years of age. Studying the responses during the tasks, they found that the dyslexic children were the slowest to respond and name the depicted items, while the normal controls were faster.

Denckla and Rudel (1976a) in a similar study compared the performance of dyslexic children, adequate readers with other types of learning problems, and matched normal children between 8 and 11 years of age. All subjects were asked to rapidly name pictured objects. The dyslexic children made more errors than the other groups of children, particularly on the low frequency words. Error analysis revealed that the majority of the dyslexic children’s errors were circumlocutions phonetically similar to the target word. By contrast, the majority of the errors made by the other learning-disabled groups were wrong name that seemed to be visually perceptually based, e.g. a pair of dice was named “Swiss Cheese.”

In the year 1979, German compared the ability of matched normal and language/learning-disabled children (8 to 11 years of age) on vocabulary comprehension and naming tasks. The groups demonstrated comparable age, general intelligence scores, Peabody Picture Vocabulary Test scores, and socio-economic status. The subjects were asked to name items in pictures, to complete open-ended sentences, and to name objects described. German found that the language/learning-disabled children made more word-finding errors than their matched controls. They found low frequency words in the close condition and the naming-to-description condition particularly difficult.

The research of the last decade suggests that many school-aged language-disordered children have lexical processing and production deficits. Although they often demonstrate comparable understanding of single vocabulary words on vocabulary measures, they often have difficulty understanding relational words. Similarly, a number of school-aged language/learning-disordered children have difficulty retrieving words, making more errors in producing names than their normal peers. Thus, selected aspects of the lexicon and the ability to access the words it contains prove difficult for some school-aged language/learning-disordered children.

In addition to this, some of these youngsters also seem to have difficulty comprehending and using the syntax and associated morphology of language. The earlier clinical account of DeHirsh et al. (1966) and Johnson and Myklebust (1967) reported that language/learning-disabled children experienced difficulty comprehending and producing syntactic structures. Johnson and Myklebust's information suggested a considerable range of severity, but DeHirsh et al. Account did not reflect this severity. Jansky's (1975) descriptions characterized the syntactic formulation deficits of language/learning-disabled children as more "subtle." She observed that their spoken language often appears adequate,

although it is not really articulate. Sentence formulation is often awkward, characterized by many sentential fragments, simple sentence forms, and the repeated use of stereotypic phrases. Delayed morphological development, particularly in the use of irregular past-tense markers and an over-extended use of pronouns was observed. She suggested that these problems seem to call less attention to themselves, merely giving one the impression that the child has a less verbal cognitive style. Consequently, these language problems often go unidentified until the children enter school and begin to have problems learning to read and spell. These observations suggest that language/learning-disabled children may sustain syntactic deficits. Confirmation of these clinical observations comes later with the research of the 70's.

Wiig & Semel (1973) performed the earliest test of the notion that language/learning-disabled children had problems understanding syntactic forms and morphological markers, as discussed earlier. In addition, they also studied their ability to comprehend passive sentence forms and comparative morphological markers. Language/learning-disabled children performed significantly worse than their age mates on these items.

Dixon (1982) compared the ability of 8- and 9-year old reading-disabled children, age-matched controls, and reading level controls on several measures of oral language. Despite a number of significant differences between the two groups, she found that the groups were comparable in their comprehension of spoken syntactic and morphological forms. She assessed their comprehension with the Grammatical Understanding sub-test of the Test of Language Development (TOLD) (Newcomer & Hammill, 1977). This test however, does not seem to adequately sample the syntactic processing that develops during the school years ((Synder, 1984).

Byrne (1981) addressed this question by comparing good and poor second-grade readers' comprehension of late-maturing structures. These included the John is easy / eager to please types of constructions identified by Chomsky (1969), and reversible center-embedded, improbable center-embedded, and control relative clause constructions. The easy /eager to please constructions were adapted from Cromer (1970), and systematically varied subject, object and ambiguous adjectives.

Following are the examples taken from each easy / eager to please construction type (Byrne, 1981, p.206):

**Subject-Adjective:** The bird is happy to bite.

DISS  
P: (L, 77:4)  
P1

**Object-Adjective:** The bird is tasty to eat

**Ambiguous-Adjective:** The bird is nice to bite.

Each sentence was requested to act out the test sentences using hand puppets. Byrne found that while all of the children understood subject-adjective sentence forms equally well, the poor readers tended to assign the logical subjects to the surface structures subject in the object-adjective sentences more frequently than the good readers. Comprehension of the relative clause constructions was assessed by asking the children to point to the one of two pictures that correctly depicted the test sentence.

Following items are taken from each of the relative cause construction types as assessed by Byrne (1981, p. 207):

**Control sentence:** The fish is biting a yellow frog.

TH-9273



**Reversible sentence:** The cow that the monkey is scaring is yellow.

**Improbable sentence:** The horse that the girl is kicking is brown.

The poor readers again tend to use less mature syntactic processing strategies on these relative clause comprehension tasks. Although both good and poor readers were comparable in their ability to process the reversible clause constructions, the poor reader tend to make more errors on the improbable relative cause sentences. They were more easily seduced into using a less mature syntactic form and chose the picture depicting the event most likely to occur in the real world. Byrne's data provided evidence for the syntactic comprehension deficits sustained by school-aged language/learning-disabled children.

In an early effort to compare the productive language of matched 7 year-old good and poor readers, Fry (1967) and Schulte (1967) subsequently summarized in a paper by Fry, Johnson, & Muehl (1970), exhaustively analyzed oral language samples collected from subjects. They found that the language of the poor readers was characterized by a lower type-token ratio, less frequent use of subject-verb-object frames, and clauses as direct objects, indirect objects, and complements than their normal peers. Transformational analyses revealed that the poor reader's sentences contained fewer transformations than their age mates. Lastly, the poor readers made significantly more errors in subject-verb agreement. Thus, these studies of the syntactic maturity of children with reading problems demonstrate that they often have deficient syntactic formulation.

A number of studies have examined the ability of language/learning disabled children to produce appropriate morphological markers. Wiig, Semel, & Crouse's (1973) study of normal, high-risk, and language/learning – disabled children

examined their performance on Berko-Gleason's (1958) measure and the Auditory Association subtest of the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk & MaCarthy, 1961). The language/learning-disabled children performed significantly worse than their age mates on both measures of inflectional morphology.

School-aged language/learning-disabled children seem to have difficulty in processing and producing syntactic and morphological forms, and they seem to be late at learning those underlying syntactic structures that develop during the elementary school years. Similarly, the transformational complexity of their productive output is reduced. They also seem to have difficulty producing appropriate irregular morphological forms and handling syntactic agreement. Thus, even during the elementary school years, language/learning-disabled children have difficulty with the syntactic component of language.

Although elementary school-age language/learning-disabled children seem to comprehend a wide variety of indirect and direct speech acts, they appear to have problems producing indirect forms. They also seem to have difficulty processing and producing the pragmatic aspect of discourse. They find aspects of both conversational and narrative discourse problematic and their comprehension of narrative discourse does not seem as complete or organized as their age mates. As conversational partners, language/learning-disabled children seem to be more passive and agreeable partners who cannot control the flow of conversation even when its direction is their responsibility. Thus, school-aged children appear to have significant problems handling the pragmatic aspect of language.

Both language-disordered children and learning-disabled children are characterized by their intact general cognitive abilities. Their language deficits, therefore, are not related to some form of mental retardation. In fact, the disorder

is defined in terms of the discrepancy between the child's linguistic skills-oral and /or written-and general cognitive abilities.

Current research suggests that language-disordered children of elementary school age sustain significant deficits in the processing and production of oral language. Unfortunately, our ability to identify and document these deficits beyond the experimental setting has been limited. Consequently, we need to translate our empirically derived knowledge of the normal and disordered language development of elementary-school children into tools for clinician assessment.

Ideally speaking, the studies should either be cross-sectional or longitudinal in nature. But for each of these studies, it is the detailed case profiles of dyslexic children that will contribute in achieving the theoretical and applicational goals. Case studies should therefore be as many as possible and as long as possible so as to serve any useful purpose. This study is, therefore, a step in this direction.

This insight into the studies carried out in the field of child language acquisition, would be helpful in the understanding the complexities that the child has to encounter in this process. This will form a base for understanding how dyslexia operates? What are its causes? What are the common ways in which it manifests itself? At what age does dyslexia become a problem? What level of intelligence does it affect? Can dyslexia be cured? How many dyslexic people are there? Are girls and boys equally affected? Does dyslexia cause behaviour problem? And so on and so forth!

Generally, the studies in this field should be either longitudinal or cross-sectional, but since this was a M.Phil dissertation and there was a time duration to be adhered to, I have restricted my work to formatting linguistic profile of dyslexic

children and I propose to do this with the help of case studies. The details of these case will be mentioned in the next chapter.

Chapter one deals with an introduction to the subject where it talks about normal language acquisition versus delayed language acquisition. The background studies which have been conducted in this area have been discussed in detail.

Chapter two mentions the methodology employed for conducting research in this field over the years and the research conducted on dyslexia. It also mentions the methodology that has been used to carry out these case studies.

Chapter three deals with the data that were collected during the research.

Chapter four deals with analysis of the data collected.

Chapter five talks about the results obtained from the study. It concludes with the realization that lot more has to be done in this field.

***CHAPTER TWO***  
***METHODOLOGY***

In this chapter, we would try to get a general view of the field of language pathology as a whole and walk through the main scientific approaches to it. Before we proceed to discuss the details of this field, I would like to sketch the historical development of the discipline with a special focus on the clinician's dilemma in assessing disordered language.

Several disciplines, including medicines, psychology, linguistics, and more recently cognitive sciences, have influenced the clinical specialization of speech-language pathology. At this point in time, one would wonder what counts as language pathology? When would you say that someone was communicatively 'disabled'? Everyone would agree that a person lacking ability in one or more of the main modes of language mode (speaking, listening, reading, writing) and in various components of nonverbal communication will face a lot of problems. The disabilities of these kinds are very common. As we already know the speech-hearing route is the primary modality in language, disabilities in this area would have more fundamental effects.

From the point of view of assessment, medicine has been the major influence since the late nineteenth century and the early twentieth century. Henry Head and Hugh -ling Jackson carried out the earliest assessment of aphasia. The assessment was confined to medical model and was aimed at differential diagnosis. Speech pathology began to emerge as an independent discipline in the mid-twentieth century and was primarily concerned with the management of children's delayed speech focussing mainly on their articulation error. The purpose of assessment became, one, the comparison of the individual child with the peer norms for a measure of delay in acquisition and two, identification and description of the patterns of articulation errors in terms of place, manner, and voicing for targeting remediation.

The 1960s witnessed a rise in the influence of linguistics on speech pathology. The increasing awareness of the benefits that accrue in terms of understanding of the disorder and the increase in the precision of the assessment and remediation process led to an incorporation of linguistic theory and principles in the assessment and remediation of speech-language disorder. The nascent field of psycholinguistics also contributed to this.

Reports on the cross-sectional and longitudinal studies of different aspects of language acquisitions and use in children became available and were reflected in the development of the assessment tools, such as, the North Western Syntax Test or NSST (Lee, 1969), Language Assessment and Remediation Screening Procedure or LARSP (Crystal, 1979), and Test of Emergent Expressive Morphology or TEEM (Shipley, Stone, and Sue, 1983). The assessment tools included those that incorporated certain theoretical linguistic constructs, but were developed largely within the psychometric framework (e.g., TEEM and NSST) and those that were designed within the methodology of descriptive linguistics (e.g., LARSP).

The 70' and 80's saw a growth in the influence of speech-language pathology. The shift of the focus in linguistics from syntax to semantics and pragmatics for a better understanding of language behavior witnessed parallel changes in the assessment of disordered language. The assessment moved from deficit-based assessments to assessments of retained abilities. At the same time, an increasing awareness of the heterogeneity of language disorders couple with a growing knowledge about different interactions between cognitive and linguistic disability has led to a problem solving approach marked by single case studies and hypothesis driven assessment.

Earlier nominative studies were seldom governed by any theory. While the assessment procedure and tools for assessment for disordered language employed

by the speech pathologists in the west have undergone great changes in consonance with the theoretical advances in the understanding of these disorders, the Indian scene is not so rich and diverse.

Indian speech-language pathologists dealing with the language disordered populations of both children and adults have suffered from the myths and mysteries related to quantification and statistics. As far as assessment was concerned in India, psychometric approach has been dominant. However, psychometric language tests often limit themselves to those aspects of language performance that are readily visible in standardized settings and which are therefore likely to be superficial features examined in an artificial environment, compared to familiar reports which are based on much more extensive data.

The focus in clinical testing however, is on the nature of individual behavior, the manner in which it is distinct from the general pattern, the needs vis-à-vis rehabilitation goals and procedures and success to be anticipated. In the light of these objectives and innumerable aspects of language behavior, the clinician has and will increasingly rely on domain-reference testing for the purposes of differential diagnosis, targeting of remediation and reevaluation.

The criterion-reference test assessed a large number of expected behaviors in each of the various language domains using structured elicitation. In order to assess all linguistic levels, one needs to focus on comprehension versus production, adequacy of form, function, and use. These assessments may be based on cognitive processing theory, theories of acquisitions, psycholinguistic theory or neurobiological theories of speech production, all of which are concerned with language behaviors in one form or another.

The philosophy of domain-referenced testing as stated by Meham and Willbrand (1979; 109) is the idea that teaching and learning can be improved if clinicians and teachers operationally specify objectives to be taught and developed criterion-referenced tests to assess student progress towards those objective. The awareness of psychometric school of thought and the relatively poorer linguistic sophistication in the training of speech-language pathologists coupled with the lack of interest on the part of linguists held back the growth of these developments in India. The two papers on the development scale for language acquisition in young children by Vaidyanath and Herlekar and Karanth are excellent example of the blend of linguistics and psychological theory and methods as applied initially to the study of language acquisition on children followed by its clinical application.

A normal procedure in scientific investigation, especially in a new or uninformed field of study, is to attempt to impose some organization upon it, by means of constructing a 'model' of the field. The purpose of scientific thought is to postulate a conceptual model of nature from which the observable behavior of nature may be predicted accurately (Walker, Marsh; *The Nature of Scientific Thought*; 1963:5; Prentice Hall, NJ).

A model is part of the process of scientific explanation. It is a visual way of expressing an abstract set of relationships, such as have been propounded by some theory. It is a way of physically representing the complex ideas, which constitute a theory, so that they can become more intelligible.

Models do four things:

- (1) They provide an intelligible representation of a theory;
- (2) They generate hypotheses for scientific testing;
- (3) They provide us with the insights about our field of study; and

(4) They tend to make us think along fixed lines.

The medical model derives from the principles and practice of medical science, or its contributing disciplines (such as anatomy and neurology). The behavioral model derives from the behavioral sciences (linguistics & psychology, in particular). Both the models have important insight to offer to the language pathologist, but both have their limitations. In some cases, the medical models will bring to light the disability; at other times an analysis in the behavior terms will be helpful. It, therefore, becomes essential that a study of language pathology would require one to be well versed in the aims and techniques of both of them.

The medical model tries to classify and explain linguistic abnormality like it does with any other body abnormality (i.e. disease). It gives emphasis to identification of the cause or causes of the disease. The behavioral model begins with the description and analysis of the patients' abnormal linguistic behavior on its own terms. The abnormality is compared with normal behavior, and treatment program is drawn without any reference to its original cause.

Let us take a little detailed view on the medical model of investigation. To begin with, we feel unwell and go to the doctor. We become patients on seeing the doctor. We give him subjective evidences about the nature of our conditions (i.e. how we feel in simple terms). The aspects of the disease, which lead to our complaints, are called symptoms. The doctor takes a medical history, in which an attempt is made to extract from us, everything that could have a direct or remote bearing on the present condition.

This is followed by a physical examination, where the doctor aims to provide objective evidence about the nature of the condition. Any physical manifestations of disease, which are encountered, are known as signs. The main techniques used

are visual inspection of the body, auditory investigation of the sounds produced by various organs, the use of the hands to feel the condition of the body, and tapping of the body surface. Taken together symptoms and signs help the doctor to arrive at a judgment. This judgment, along with the process that led to it, is known as diagnosis. Diagnosis in its medical use is a decision made about the nature of a disease. The above distinctions indicate the complexity of the concept in medical practice, and the importance of careful use and interpretation of the term.

A similar complexity underlies the other major concept of the medical model, particularly important to language pathology, the notion of Etiology. Etiology is the study of the causes of a disease. It involves study of both the direct causes of disease as well as the predisposing factors, which lead to the disease.

The medical model is traditionally felt to be an essential part of any language pathologist's training, because it provides a standard procedure of investigation, and a body of knowledge which can be used as an initial frame of reference for analyzing linguistic disability.

But there are also some serious limitations of the medical model. It only provides the beginning of an explanation of a communicative disability but no explanation at all. For those disabilities where there is no obvious cause of the difficulties, the applicability of the medical model is less easy to see. A fundamental of the model is 'identify the cause, and then act to eliminate that cause or prevent it.'

A second difficulty is that even if the cause to the disorder can be identified not all causes are treatable. This means that the model does not give any positive guidelines as to how the treatment should be carried out. It became clear that an alternative way of identifying linguistic disability was needed by which one could try and classify them in terms of patient's observable behaviour.

The other main model used in language pathology is not so familiar, as it is recent development (20<sup>th</sup> century) and is derived from the subjects such as psychology, sociology, and linguistics. Behavioural sciences (David Crystal, 1993) refer to those sciences that study the behaviour of humans and animals-psychology, social anthropology and linguistics. For the purpose of present study we will use the phrase behavioural model not to refer to a school of thought, but to show that our main source of information will come from linguistics. A secondary focus will be on psychology, particularly components of cognitive psychology.

### **What is a behavioural model?**

It is in very general terms the focus on the patient's behaviour. Detailed description and analyses of the patient's behaviour are produced and the profile of behaviour is then compared to what is identified as normal. Behavioural model is essential to treatment planning for the speech and language therapists. It is not alternative to the medical model, as each model focuses on different aspects of the diagnostic-treatment process of language pathology.

The study of language pathology involves five independent stages:

1. The description of the linguistic behaviour of the patient, and the corresponding behaviour of the clinician and other who interact with them.
2. The analysis of these descriptions, with a view to demonstrating the systematic nature of the disabilities involved.
3. The classification of the patient behaviour, as a part of the process of differential diagnosis.
4. The assessment of this behaviour, i.e. plotting the kind and degree of the abnormality with reference to normal behaviour.

5. The formulation of hypotheses for the treatment of this behaviour, and evaluating the outcome of all hypotheses as treatment proceeds. (Crystal;1984)

In this way of looking at things, a large amount of preparatory work goes into process of treatment. Before treating a patient's linguistic disability, one must have first reasoned out in advance what particular aspect of grammar, pronunciation or vocabulary would be the best to start (Stage 5). In order to decide this, a systematic assessment of this disability would have been carried out (Stage 4). How do you assess someone's language? It needs to be found that how or in what way, which abnormal feature of behaviour differentiate the patient from normal language users, and from other types of patient (Stage 3). This means that some kind of pattern, or system, in the abnormal behaviour has been identified (Stage 2). It definitely is impossible to work out a system, if the object of study hasn't been described first (Stage 1).

The second branch of behavioral approach to language pathology is to examine communicative disabilities from the perspective of psychology. Psychology involves scientific study of human behaviour. Just as linguistics does not confine itself to the study of observable linguistic behavior hence allowing speaker's intuitions about their language as valid object for study, so psychology studies invisible mental events as well as overt behaviors.

Psychology can be divided into a number of subfields, some of which have a great deal of relevance to language pathology. Cognitive psychology, developmental psychology, neuropsychology, social psychology, and abnormal psychology are the ones with obvious applications to communication disorders. We will now briefly discuss the above.

## **COGNITIVE PSYCHOLOGY**

Cognition concerns all the skills involved in the processing of information-in receiving and registering information, storing it, and manipulating and transforming it, and retrieving and using it. Language is one form of information, which the human mind is able to process. If we are faced with individuals with deficit in certain cognitive abilities, it is likely that it will have secondary effects on their ability to communicate.

## **DEVELOPMENTAL PSYCHOLOGY**

This branch deals with changes in behaviour throughout the life span. Development psychology tells the clinician about what can be regarded as a normal pattern of behaviour at any particular age. This information is vital for investigation of a child with language delay.

## **NEUROPSYCHOLOGY**

This branch deals with the relationship between behaviour and brain. The clinician can make predictions about what areas of behaviour might be impaired by a brain lesion in a certain location. This area of psychology is particularly helpful in assessing the problems of the children and adults with acquired dyslexia or dysgraphia.

## **SOCIAL PSYCHOLOGY**

This branch undertakes the work of describing non-verbal communications. Their descriptive framework has been used in analyzing non-verbal communicative disturbances in language pathology clinics.

## **ABNORMAL PSYCHOLOGY**

This branch deals with the study of behaviour that falls outside what is defined as normal. The types of behaviour, which a psychologist might address, range from anxiety and depression to severe psychotic illnesses such as schizophrenia.

It is now clear that the two models of investigation, the medical and the behavioural, provide very different kinds of information about the patient, and that both are necessary for understanding the patient's abilities and limitations fully, and for a positive rationale for treatment and rehabilitation. A question that arises then is that whether there is a one-to-one correlation between these models? Would a given category of disease always produce similar kinds of abnormal behaviour? The answer is no.

Then the question is why so? Firstly, the problem is the difficulty in matching the patients in the first place. Even if we match a group of children, suffering from the same problem, closely for age, sex, social class, severity of the problem, and all the other factors that we know about, there are still many factors that we don't know about.

Secondly, there are other things to be considered, 'Was there any brain damage?' 'Do all the children suffer from the same degree of severity?' Have the children been taught in a formal way? What are the emotional needs of the child? All these questions amount to an explanation as to why it is unlikely that there will be a very close correlation between a medically defined group of patients and a behaviorally defined one. (David Crystal, 1993)

Of the various classifications of language pathology, the most relevant to the present study was the concept of language delay vs. language deviance. For any child who is not reading as well as one would expect given the particular child's age and intelligence, one could ask

- Whether the way the child reads corresponds to the way that a younger normal child reads, in which case the disorder (here dyslexia) is a matter of delay.
- Whether the child's reading is quite unlike what one sees in any normal reader of whatever age, in which case the disorder (here dyslexia) is a matter of deviance.

Having discussed the various investigative models and how they compliment each other in contributing to diagnosis and treatment of language disorders, we would discuss the various investigative models that are applicable to the field of dyslexia.

A hundred years ago, in November 1896, a doctor in Sussex, England, published the first description of learning disorder that would come to be known as developmental dyslexia. "Percy F.....aged 14.....has always been a bright and intelligent boy," wrote Dr. Pringle's in his paper on 'Congenital Word Blindness' which appeared in the "British Medical Journal" "quick at games, and in no way inferior to others of his age. His great difficulty has been—and is not—his inability to read."

In that brief introduction, Morgan captured the paradox that has intrigued and frustrated scientists for a century, since the profound and persistent difficulties some very bright people face in learning to read. In 1996 as in 1896, reading ability is taken as a proxy for intelligence, but experience of millions of dyslexics has shown that such an assumption is not correct. In dyslexia, the seemingly invariant relation between intelligence and reading ability breaks down.

From the middle of the 18<sup>th</sup> to the middle of the 19<sup>th</sup> century, phrenology, which was devised by German physician Franz Joseph Gall, was a very popular brain science. Phrenologists believed that they could analyze a person's character from the shapes and bumps of his or her skull. They also believed that different parts of

the brain were responsible for very specific characteristics, skills, and talents. This was the localization theory, which was later developed by Broca and Wernicke in the second half of the 19<sup>th</sup> century when they identified the areas of the brain that were used for processing language.

During the 20<sup>th</sup> century, improved microscopes, advanced brain surgery and brain scans led to clearer mapping of the brain structure. Marcus Raichle's fMRI continues to focus on localization of specific purposes and the brain in action when undertaking word-based tasks.

Bennett and Shaywitz's research contains further proof of gender differences in brain organization for cognitive function. Using fMRI scanning they have shown that when involved with phonological processing only an area in the left hemisphere of the brain, formerly identified as being involved in language processing, is activated in men where as in women both this area and an area in the right hemisphere are involved.

There are clear strands of evidence from genetics, anatomy and fast-processing research that the phonological problems that disrupt the acquisition of literacy are likely to be accompanied by other problems in the fast-processing of incoming sensory information.

Early explanation for dyslexia, put forth in the 1920's held that defects in the visual system were to blame for the reversals of letters and words thought to typify dyslexic reading. Eye training was often prescribed to overcome these alleged visual defects. Subsequent research has shown, however, that children with dyslexia are not unusually prone to reversing letters or words and that the cognitive deficit responsible for the disorder is related to the language system.

In particular, dyslexia reflects a deficiency in the processing of the distinctive linguistic units, called phonemes, which make up all spoken and written words. Current linguistic models of reading and dyslexia now provide an explanation of why some very intelligent people have trouble learning to read and performing other language related tasks.

Shaywitz and her colleagues at the Yale Center for the Study of Learning and Attention in course of her work came across a medical student named Gregory who had no trouble comprehending the intricate relations among physiological systems or the complex mechanisms of disease; in areas requiring reasoning skills. The problematic area for him was the simple act of pronouncing long words or novel terms. He was a dyslexic child.

Over the past two decades, a coherent model of dyslexia has emerged that is based on phonological processing. The phonological model is consistent both with the clinical symptoms of dyslexia and with what neuroscientists refer to as brain organization and function. To understand how it works, one has to first consider the way in which language is processed in the brain. Researchers conceptualize the language system as a hierarchical series of modules or components, each devoted to a particular aspect of language. The components involved with semantics (vocabulary or word meaning); syntax (grammatical structures) and discourse (connected sentences) are at top. And at the lowest level is the phonological module, which is dedicated to processing the distinctive sound elements that constitute language.

The phoneme, defined as the smallest meaningful segment of language, is the fundamental element of the linguistic system. The word “cat” for example, consists of three phonemes: “kuh”, “aah”, and “tuh” (/k/, /æ/ and /t/). Before a word can be identified, understood, stored in memory or retrieved from it, it must

be broken down, or parsed, into their phonetic units by the phonological module of the brain. In spoken language, this process occurs automatically, at a preconscious level. A genetically determined phonological module automatically assembles the phonemes into words for the speaker and parses the spoken word back into its underlying phonological components for the listener.

Reading reflects spoken language, but interestingly it is a harder skill to master. The reason being although both speaking and reading rely on phonological processing, there is a significant difference: speaking is natural, and reading is not. Reading is an invention and must be learned at a conscious level. The task of the reader is to transform the visual percepts of alphabetic script into linguistic ones, i.e. recode graphemes into their corresponding phonemes.

In a dyslexic child, a deficit within the language system at the level of the phonological module impairs his or her ability to segment the written word into its underlying phonological components. This explanation of dyslexia is referred to as the phonological model or sometimes as the phonological deficit hypothesis

According to the hypothesis, a circumscribed deficit in phonological processing impairs decoding, preventing word identification. This basic deficit in what is essentially a lower-order linguistic function blocks access to higher-order linguistic processes and to gaining meaning from the text. Therefore in spite of the fact that the child has his language processes involved in comprehension and meaning in place, he is not able to use them because he is unable to identify a word.

All the research in this field has led to the conclusion that though the phonological component of the language system is impaired in dyslexics, the higher-level components remain intact. Linguistic processes involved in word meaning,

grammar, and discourse (underlying comprehension) seem to be fully operational, their functioning is blocked by the lower-level function of phonological processing.

Many so-called dyslexics learn to read and write and even excel in academics despite their disability. These so-called compensated dyslexics perform as well as non-dyslexics on tests of word accuracy. They have learned how to decode or identify words and that has resulted in their being able to access the higher levels of the language system.

The phonological model incorporates a modular scheme of cognitive processing in which each of the component processes used in word identification is carried out by a specific network of brain cells. In the clinical field there was, until recently, no firm way of mapping cerebral localization of the higher cognitive processes, as it could only be inferred from the effects of brain injury on people who survived them.

With the advent of the functional magnetic resonance imaging (fMRI) in the late 1980's, it became possible to now measure the changes in the metabolic activity of the brain while an individual performed a cognitive task. The identification of letters activates sites in the extrastriate cortex within the occipital lobe; phonological processing takes place within the inferior frontal gyrus; and access to meaning calls on areas within the middle and superior temporal gyri of the brain.

Research revealed surprising differences between men and women in the locus of phonological representation for reading. In men phonological processing engages the left inferior frontal gyrus, whereas in women it activates not only the left but the right inferior frontal gyrus. These differences had been suggested by the behavioural studies. It is now possible to have a possible neurobiological

“signature” for reading. The isolation of such a signature brings the possibility that in future dyslexia could be more precisely diagnosed.

The phonological model crystallizes exactly what is meant by dyslexia. It is an encapsulated deficit often surrounded by significant strengths in reasoning, problem solving, concept formation, critical thinking and vocabulary. Though some compensated dyslexics may use the “big picture” of theories, models and ideas to help them remember specific details. When details are not unified by associated ideas or theoretical frameworks dyslexics can be at a real disadvantage. The phonological model predicts, and experimentation has shown, that rote memorization and rapid word retrieval are particularly difficult for dyslexics.

Even when you know the information, needing to retrieve it rapidly and present it orally often results in calling up a related phoneme or incorrectly ordering the retrieved phonemes. In reading non-impaired readers can recode words automatically, individuals frequently need to resort to the use of context to help them identify specific words. This strategy slows them further and is another reason that the provisions of extra time is necessary if dyslexics are to show what they actually know.

Researchers at the Yale Center suggests that many compensate dyslexics have a distinct advantage over non-dyslexics in their ability to reason and conceptualize and that the phonological deficit masks what are often excellent comprehension skills. A century after W. Pringle Morgan first described dyslexia, society may at last understand the paradox of the disorder. (Shaywitz, S: 1996)

The learning problems are developmental, and are the product of three very common human traits. Dyslexia is the product of thought, talent, and a low tolerance for the emotion of confusion. The dyslexic will be primarily a "picture

thinker" until at least the age of 9. This kind of thinking is subliminal, so the dyslexic is usually not aware that they are doing it.

Dyslexics can intentionally cause themselves to be disoriented. Disorientation is the state and condition of the brain shifting from actual perception to distorted or altered perception. If you are dizzy, you can feel like you are moving when you are not, and stationary things in the environment can appear to be moving. This is a form of disorientation. There is nothing uncommon about disorientation, all humans can, and do, do it quite often. What is uncommon is intentionally causing it to happen. The dyslexic is born with the ability to cause it to occur.

Disorientation will allow the dyslexic brains to see more than what their eyes see, to hear more than what their ears hear, and feel things their body isn't touching. If you see a child daydreaming, this is what they are doing. Daydreaming is just one of the myriad of gifts this talent can give the dyslexic. A learning disability is another. Because disorientation is a natural ability, the dyslexic incorporates it into their thought and recognition process.

The final piece of this puzzle has to do with the emotion we recognize as confusion. It is the feeling we experience if we look at something and fail to recognize what it is, or if something unexpected happens. Being disorientation enhances this ability, because disorientation will allow the person to see or experience an object from a myriad of perspectives. Because of this, the dyslexic begins using disorientation in the process of recognition. When disorientation is used in this way, recognition happens very quickly.

So the dyslexic experiences the emotion of confusion for only a few seconds at any given time. Whenever a dyslexic becomes sufficiently confused they will automatically become disoriented. This is how the gift of dyslexia can become a

learning disability. Any aspect of learning which causes sufficient confusion will for the person will be an aspect of learning wherein the person would be learning disabled.

The purpose of the studies that have been carried out in this field have been mainly to evolve and develop theories which will help us understand the cognitive processes underlying this language disorder.

Models for conducting assessments in the area of dyslexia were not very helpful as they were based for monolinguals or English speaking children. There was nothing for Indian languages or an Indian child who is a bilingual. Keeping in mind the phonological and orthographical features of a language we devised the following tests in Hindi and English.

**Aim and Objective** of the present study is to format the linguistic profiles of the dyslexic children in Delhi by way of case studies. As already stated studies in this area should either be cross-linguistic or a longitudinal study. But this being an M.Phil dissertation and keeping the time constraints in mind many of the other aspects have not been studied. I have concentrated only on formatting the linguistic profiles of dyslexic children on the basis of data collected from them by testing them in Hindi and English phonemes.

### **Sample Selection**

For sample we had to rely on the schools in Delhi (Sri Ram School, The Indian School, Delhi Public School), VIMHANS (Vidyasagar Institute of Mental Health and Neurosciences).

The sample consisted of Five children, all boys, in the age group of 7-1/2 to 9-1/2 years old. They are from the Hindi or Punjabi speaking background. They are all

studying in English speaking schools and therefore they have had at least elementary exposure to English language. Each child was asked to read the test individually and then the same test was dictated to assess their spelling. Their responses in the reading tests for both the languages were then transcribed phonemically. The writing test is reproduced as it is.

A control group consisting of two children in the age group of 6-7 years old was selected and the same test was administered to them. The other control factors such as the age, socioeconomic background, and linguistic background were uniform for the entire group.

### **ANALYTICAL PROCEDURES**

The data thus collected was analyzed and tabulated. We classified the data on phonological level, orthographical level and above level of word i.e. morpho-syntactic level (the structural and semantic level).

This kind of classification led to further refinement in the model. This chapter is followed by detailed case studies. Case studies being from almost the same background we will treat it as a cross-sectional study.

***CHAPTER THREE***  
***CASE STUDIES***

## INTRODUCTION

“In the process of selecting the specific key sounds to include in therapy, we are formulating our working hypothesis of the most effective route to follow in correcting a child’s speech, the effects of therapy upon the child’s speech constitute a test of these hypotheses. With each child, we are conducting an experiment, the result of which allows us to further refine our hypotheses and thereby improve the effectiveness of therapy. In this sense the dichotomy between therapy and research is totally without foundation.” (Compton, 1976)

The clinician is always generating hypotheses, collecting data and analyzing them. To further our knowledge of the field of language impairment requires a lot of development in the research process. In order to be better equipped to take part in this process we need to consider three main areas:

1. The questions one should ask,
2. The method(s) that could answer the question(s), and
3. How to ‘do’ research?

### *What questions should one ask?*

Questions about the severity of the presenting problem, or the features of the condition, are very relevant in language impairment. Questions about prognosis are usually of prime concern to the parents and the people who would help in caring for the child’s needs in any field, and are important for planning for future needs of the other clients. Yet a documented course of language problems or their residual effects in sufficient detail is rarely found. From the clinical aspect, the main consideration of choosing the question, around which the hypothesis would be generated, should be the size of the question, its scope and manageability, and relevance of the research to clinical practice.

Clinicians' abilities to identify and provide high quality service to children are restricted by lack of evaluation instruments that directly assess children's pre-linguistic and early linguistic behaviors. Identification and assessment must incorporate a probabilistic perspective, since there presently are no clear clinical indices available that allows us to distinguish between children who demonstrate slow language development from those children who demonstrate "genuinely" altered language development.

If literature provides us with descriptions of linguistic differences between normally developing and impaired children, then the question of what, how and when to measure would be simplified. Though this is not the case. Johnston (1982) reviewed studies that attempted to find differences in syntax, grammatical morphology, relational semantics, lexical semantics, and pragmatics. She drew similar conclusions. Johnson stated that "research to date revealed virtually no consequence of learning language out of phase. Language disordered children may learn to speak slowly and late, but little else about their language has proved remarkable (1982,p.789). The implication for assessment appears that either one stops looking for differences or alters the way in which attempts have been made to isolate differences. Interestingly, for supporting her view she sites four longitudinal studies.

The results of studying relations among different aspects of the grammar should advance our ability to define what constitutes a language disorder. These studies should also include the study of patterns of coherence, and dissociation in linguistic, cognitive, and affective domain. This approach may be critical for objectification of the clinician's belief that many children who are language impaired are different, not just delayed.

The next question that follows is:

*What method(s) would answer the question the question(s)?*

Different professional groups have generally evolved a tendency to adopt particular research methods to answer the questions posed in their clinical studies. Some to these research methods have been used in clinical research with language-disordered children.

## **STUDIES FOR LANGUAGE-IMPAIRED CHILDREN**

There are different kinds of studies that could be used to study language impaired children. They are discussed as follows:

### ➤ **Longitudinal studies**

In this kind of method one selects a group of children on the basis of some specific criteria, determines the time span over which the group will be studied and then samples a particular behaviour at certain times during the study. This is a common method used for determining the natural history of many developmental disorders in childhood. It forms the basis of studies of developmental language problems.

If the object of study is to discern trends in the evolution of behaviour, which can be generalized to other groups of children, the sample size will be important. The criteria of which the children are selected will depend on the question to be answered. If the developmental pattern is being investigated, then right age becomes the most important criteria. Similarly, the time span may influence the way of conducting the study. The frequency of testing will depend upon how much is already known about the problem.

The advantage of a longitudinal study is that, with careful planning, sampling can be spread out or occurs in blocks depending on the researchers' preference. Armed with the information about natural history one is in a better position to consider the appropriate timing of therapy or measure the effect of intervention.

➤ **Case descriptions:**

A case description is just as the name suggests --- the description of a case. The method of reporting clinical observations is commonly used in many branches of medicine, including child development, clinical genetics, and psychiatry. The range of human behavior is very wide and previously unreported phenomena do appear from time to time. Equally, new techniques of management may be reported in descriptive terms before they can be reported to have achieved statistically significant results. With these points in mind, the case description would appear to be a useful method of reporting that could be used in speech and language pathology.

To prepare a case description, the most compact information about the child needs to be available. Because this method makes no attempt to control of variables, it is important to document what all the possible variables in each case might be. A full history of the child should be given, including family history. The use of objective measures will be important in achieving this, because it will help other workers to identify similarities in other children. Where possible a profile of identifying features should be included.

Most case descriptions form the initial basis for identifying a condition or behavior, or for describing a possible management strategy so that it can be further defined, evaluated or tested through a more stringent procedure. It is also important to remember the limitations of the method. Firstly, the clarity of the description may be open to a range of interpretations. Secondly, where a response

to a treatment is described, it must be remembered that this has not been validated against controls. It may be that such a response was just a feature of the natural history of the condition and not related to treatment. Without control measures, this cannot be determined; however, this is still useful place to begin research with language-disordered children.

➤ **Single case designs:**

This is a variation of the case description, and may provide possible alternatives, which include some control of the variables needed to evaluate the effectiveness of language therapy in children. The basic premise underlying the various types in this group is that the subject acts as his or her own control. Thus, the periods of treatment are placed in sequence with periods of non-treatment, and the progress with treatment was significantly better. The advantage of this method is that the number of cases involved at any time can be as small as one. It is possible to use a single case design with the whole group. The major disadvantage of the method is that a number of assessments are required during the course of study to demonstrate and then reconfirm any treatment effect.

Basically, the methodology requires a pre-treatment period in which the child is assessed or observed, and a baseline method of the behavior under consideration is established. Once established, treatment is introduced, after which the behavior is measured again and any change from the base line documented.

The complex nature of language disorders and the way this affects the developing child is of concern to a wide range of professionals. Labeling a situation, condition or individual helps one recognize it when you come across it again. Some may find that a label demystifies a problem, others may think that labeling may lead to mystification of the problem. In the field of language disorders some see the process of differential diagnosis in terms of giving it a label. Differential diagnosis

is about unraveling the whole situation in order to allow for appropriate forward planning for the child.

Treating a child's language problem is more a question of carefully detailing how the conditions unfold and what is the child's response to therapy program. It is therefore, necessary to know how severe is the problem and what are the child's strengths and weaknesses. This is the process of assessment. And the process of assessment generally starts with recording of a case history. It is important to establish a rapport with the child and the family. The best way to do that is to informally interview or rather chat with the whole family. The child has a chance to settle down and interact with the person taking the assessment, as he is not expected to perform straightaway. Wherever appropriate the child should be asked to contribute to the case history with names of the other siblings, school attended etc.

A case history will contain name of the child, a description of child's activity, the size of the family, linguistic background, family history if any, history of development of the child, any past medical history (prior to or during pregnancy or after birth), the child's transitions to school, his social relations, etc.

During the course of my study, I did not have access to the medical background or history of the child because *VIMHANS* is subject to the confidentiality policy wherein the medical information of a patient can not be revealed to anyone. Even the parents were not of much help because they also relied on *VIMHANS* for the details and they had no copies of the reports. My knowledge of the child's medical background is mostly reported by the parents, and I cannot validate it with documentary proof.

VIMHANS's, special educator, Joyshree referred me to 'Manas.' *Manas* is a private institution established by specialists from many fields e.g. psychiatry, psychology, speech pathology, neurology etc. All the cases presented in this study have been procured from Manas.

## CASE STUDY 1

NAME: ABHAY

Linguistic background:

- Father's language: Hindi
- Mother's language: Punjabi and Hindi
- Languages spoken at home: Hindi .
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi

Number of siblings: 3

Medical history:

- Was born through normal delivery
- He has no reported medical problems

Abhay was a member of the control group selected. He too was asked to read and write the same test for English and Hindi languages. His responses were used as the benchmark reading and writing ability of a child of this age group who does not display any specific learning disorders.

His responses for the test have been phonemically transcribed. His original English and Hindi written test have been given in the appendix. Table 1 (a) is his response sheet for the English (reading test). Table 1 (b) is the response sheet is the response sheet for Hindi (reading test). Table 1 (c) is the response sheet for English (written test). Table 1 (d) is the response sheet for Hindi (written test).

TABLE 1(a) English reading test

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>	<i>Phonemic Transcription</i>	<i>Student's response</i>
pæt	pæt	æpl	æpl	tɪp	pɪt
pɪt	pɪt	əpɪər	æpr		
bɪt	dɪt	bʌb(e)l	bʌb(e)l	læmb	læmb
mɪt	mɪt	læmp	læmp	ʤæm	ʤæm
tɒm	Tɒm	həʊtəl	həʊl	pɪt	pɪt
tɪk	tɪk	rɪtʒ:n	rɪ:tən		
dæd	dæd	raɪd	raɪd	bæd	bæd
nek	nek	ænt	ænt	pɪn	pɪn
kɪŋ	kɪŋ	skæt	sæt	blæk	blæk
klɪmb	klɪmb	skhu:l	skhu:l	læk	læk
gə:rl	gə:rl	lɒŋgə( r)	lɒŋgə( r)	bæg	bæg
		fɪŋər	fɪnə:	sɪŋ	sɪŋ
fæt	fæt	sɔft	sɔft	li:f	li:f
fæn	væn	ovər	ovər	dʌv	dovi:
sɔw	sɔ	fæst	fæst	pa:s	pa:s
zɪp	zɪp	leɪzɪ	leɪzɪ	wɔs	wɔs
ʃu:	ʃu:	mæʃi:n	mæki:n	fɪʃ	fɪʃ
θʌm	tʌm	mæθs	mæts	bəθ	bat
ðɪs	ðɪs	mʌðər	mʌðər	wɪð	wɪð
		ju:zʊəl	juəl	ru:ʒ	rog
tʃeə(r)	tʃeə(r)	ti:tʃər	ti:kər	rɪtʃ	ri:tʃ
dʒʌg	dʒʌg	pɪdʒɪn	pɪɟɪn	pædʒ	pædʒ
li:f	li:f	sɔ:lt	sɔ:lt	fi:l	fi:l
rʊf	rʊf	zɪərʊs	zɪərʊs	fɪər	fɪər

ju:	ju:	hju:ɟʒ	hɫjə	pleɪ	pleɪ
wɒtʃ	wɒtʃ	swɪm	swɪm	məʊ	məʊv
wheɪl	wɑɪl	evrɪhweər	evrɪvi:r		
hæt	hæt	whɔt	whɔt		
		bɔtl	bɔtl		
ɪt	ɪt	bɪt	bɪt		
eat	i:t	mi:t	mi:t	bi:	bi:
erɪt	erɪt	berɪt	bet	ðəɪ	ðəɪ
ɛg	ɛg	bɛd	bɛd		
ækt	ækt	pæn	pæn		
u:z(ə)	u:ɟʒ	bu:t	bu:t	blu:	blu:
		fʊ(t)	fʊ(t)		
ʌvən	ovən	kʌt	kʌt		
əʊn	ʊn	ku:t	ku:t	gu:	gu:
ɔ:l	a:l	bɔ:l	bɔ:l	sɔ:	sɔ:
a:m	a:m	fɑðər	fɑðər		
ələʊn	əlʊn	melədɪ	meldɪ	ðəɪ	ðə
aɪs	aɪs	bɑɪt	bæt	bɑɪ	bɑɪ
aʊl	aʊl	braʊn	braʊn	kaʊ	kaʊ
ɔɪl	ɔɪl	sɔɪl	sɔɪl	bɔɪ	bɔɪ
Phonemic Transcription	student's response	phonemic transcription	student's response	phonemic transcription	student's response
ʃɔp	ʃɔp	pʊʃ	pʊʃ	spu:n	spu:n
tʃɪn	tʃɪn	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	tɪn	bæθ	bæθ	bɔi:	bɔi:
mʌðər	mʌðər	wɪð	wɪð	slou	slou
when	wen			bred	bri:d
ʃʌt	sʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	aɪs
Phonemic Transcription	student's response	phonemic transcription	student's response		
stɒp	stɒp	pɪŋk	pɪŋk		

slɪp	slɪp	best	best
frɔg	frɔg	sænd	sæd
kli:n	klɪn	dʒʌmp	dʒʌmp
gra:s	gra:s	rɪŋ	rɪn
pleɪ	pleɪ	tent	tent
drʌm	drʌm	help	help

The next text is the reading test for Hindi. Abhay responses have been produced phonemically.

TABLE 1(c) Hindi reading test

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>
pəvən	pəvən	səpna:	səpna:	a:p	a:p
phəl	fəl	səphəl	səfəl		
fəsəl	fəsəl	ma:fi:	ma:fi:	sa:f	sa:f
bəndər	bəndər	səbəl	səbəl	səb	səb
bha:lu:	bha:lu:	əbhəy	əbhəy	la:bh	la:bh
ma:ta:	ma:ta:	səməy	səməy	pərəm	pərəm
vən	vən	dəva:	dəva:	na:v	na:v
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
tho:ra:	to:ra:	ha:thi:	ha:thi:	ha:th	ha:th
na:k	na:k	ra:ni:	ra:ni:	ka:n	ka:n
lori:	lori:	holi:	holi:	kəməl	kəməl
rəssi:	rəssi:	həra:	həra:	ghər	ghər
sə:ək	sə:ək	məsa:la:	məsa:la:	pa:s	pa:s

zi:ro	zi:ro	nəzər	nəzər	mez	medʒ
ʧəpək	ʧəpək	kāta:	kata:	ka:t	ka:t
ʧhəhər	təhər	mi:ʧha:	mi:ʧha:	pi:ʧh	pi:ʧh
ʃəʧkon	bəʧkən	bha:ʃn	bha:bən	ma:nuʃ	ma:nub
cha:r	cha:r	ma:chis	ma:chis	la:ləch	la:ləch
çətri:	çətri:	kəçhua:	kəçhua:	pū:çh	pū:çh
še:r	še:r	a:ša:	a:ša:	ta:š	ta:š
dʒəg	dʒəg	ka:dʒəl	ka:dʒəl	su:rədʒ	su:rədʒ
dʒhənda:	dʒhənda:	pətʒhər	pətədʒhər	sā:dʒh	sa:dʒh
kələm	kələm	pəkər	pəkər	nəmək	nəmək
khətra:	khətra:	məkkhən	məkkhən	bhu:k	bhu:k
ga:l	ga:l	pa:gəl	pa:gəl	ələg	ələg
ghər	ghər	ra:ghəv	ra:ghəv	məgh	məgh
əmər	əmər	kəmər	kəmər	səməy	səməy
a:g	a:g	ta:ra:	ta:ra:	gəla:	gəla:
ɪmli:	ɪmli:	kɪta:b	kɪta:b	rəvi	rəvi
ī:t	ɪ:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	chup	chup	mədhu	mədhu
ū: ʧ	ū: ʧ	chu:ha:	chu:ha:	sadhu:	sadhu:
e:k	e:k	pe:r	pe:d	ke:le:	ke:le:
ɛnək	ɛnək	dəkət	dəkə	mɛ~	mɛ~
o:le	o:le	mo:ta:	mo:ta:	ro:ko:	ro:ko:
ɔrət	ərət	kən	kən	sɔ	sɔ

## CASE STUDY 2

NAME : JATIN

### **Linguistic Background:**

- Father's language: Hindi
- Mother's language: Hindi
- Language spoken at home: Hindi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi and English

**Number of siblings: 2**

### **Medical history:**

- He has no serious medical problem.

Jatin is a boisterous child. He has a good grasp on the phonics of English language. Therefore, one can see this reflected in the the English and Hindi reading test.

His responses for the test have been phonemically transcribed. His original English and Hindi written test have been given in the appendix. Table 2 (a) is his response sheet for the English (reading test). Table 2 (b) is the response sheet is the response sheet for Hindi (reading test).

TABLE 2 (a)

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pæt	pæt	æpl	æpl	tɪp	tɪp
pɪt	pɪt	əpɪər	æpr		
bɪt	bɪt	bʌb(e)l	bʌb(e)l	læmb	læmb
mɪt	mɪt	læmp	læmp	jæm	jæm
tɒm	tɒm	həʊtəl	həʊtl	pɪt	Pɪt
tɪk	tɪk	rɪtɜ:n	rɪtn		
dæd	dæd	raɪd	raɪd	bæd	bæd
nek	nek	ænt	ænt	pɪn	pɪn
kɪŋ	kɪŋ	skæt	sæt	blæk	blæk
klɪmb	klɪmb	skhu:l	skhu:l	lʌk	lʌk
gə:rl	gə:rl	lɒŋgə(r)	lɒŋg	bæg	bæg
		fɪŋər	fɪnər	sɪŋ	sɪn
fæt	fæt	sɔft	sɔft	li:f	li:f
væn	væn	ovər	ovər	dʌv	dʌv
sɔw	sɔw	fæst	fæst	pɑ:s	pɑ:s
zɪp	zɪp	leɪzɪ	leɪzɪ	wɔs	wɔs
ʃu:	ʃu:	mæʃi:n	mæsi:n	fɪʃ	fɪʃ
θʌm		mæθs	mæθs	bæθ	bæθ
ðɪs	ðɪs	mʌðər	mʌðər	wɪð	wɪð
		ju:zuəl	ju:l	ru:z	rog
tʃeə(r)	tʃeə(r)	ti:tʃər	ti:tʃər	rɪtʃ	ri:tʃ
dʒʌg	dʒʌg	pɪdʒɪn	pɪgɪn	pædʒ	pædʒ
li:f	Li:f	sɔ:lt	sɔ:lt	fi:l	fi:l

ruf	Ruf	ziərəu	ziərəu	fiər	fiər
Ju:	ju:	hju:dʒ	hɫgə	pleɪ	pleɪ
wɒtʃ	wɒtʃ	swim	swim	məu	mo
Wheɪl	veil	evrihwear	veri		
hæt	hæt	whɔt	whɔt		
		bɔtl	bɔtl		
ɪt	ɪt	bɪt	bɪt		
eat	i:t	mi:t	mi:t	bi:	bi:
ert	ert	berɪt	bet	ðeɪ	
ɛg	ɛg	bɛd	bɛd		
ækt	ækt	pæn	pæn		
u:z(ə)	u:dʒ	bu:t	bu:t	blu:	blu:
		fʊ(t)	fʊ(t)		
ʌvən	ovən	kʌt	kʌt		
əʊn	ɒn	ku:t	ku:t	gu:	gu:
ɔ:l	ɔ:l	bɔ:l	bɔ:l	sɔ:	sɔ:
a:m	a:rm	fɑðər	fɑðər		
ələʊn	əlʊn	meləɪ	medɪ	ðeɪ	
aɪs	aɪs	bɑɪt	bɑɪt	bɑɪ	bɑɪ
aʊl	aʊl	braʊn	braun	kau	kau
ɔɪl	ɔɪl	sɔɪl	sɔɪl	bɔɪ	bɔɪ
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
ʃɔp	ʃɔp	pʊʃ	pʊʃ	spu:n	spu:n
tʃɪn	tʃɪn	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	tɪn	bæθ	bæθ	bɔi:	bɔi:
mʌðər	mʌðər	wɪð	wɪð	slou	slou
when	ven			bred	bred
ʃʌt	sʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	ɪs
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>		

stɒp	stɒp	pɪŋk	pɪŋk
slɪp	slɪp	best	best
frɔg	frɔg	sænd	sænd
kli:n	kli:n	dʒʌmp	dʒʌmp
gra:s	gra:s	rɪŋ	rɪŋ
pleɪ	pleɪ	tent	tent
drʌm	drʌm	help	help

The next text is the reading test for Hindi. Jatin's responses have been produced phonemically.

TABLE 2 (c)

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pəvən	pəvən	səpna:	səpna:	a:p	a:p
phəl	fəl	səphəl	səfəl		
fəsəl	fəsəl	ma:fi:	ma:fi:	sa:f	sa:f
Bəndər	bədər	səbəl	səbəl	səb	səb
Bha:lu:	bha:lu:	əbhəy	əbhə:y	la:bh	la:bh
ma:ta:	ma:ta:	səməy	səməy	pərəm	pərəm
vən	vən	dəva:	dəva:	na:v	na:v
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
tho:ra:	to:ra:	ha:thi:	ha:thi:	ha:th	ha:th
na:k	na:k	ra:ni:	ra:ni:	ka:n	ka:n

lori:	lori:	holi:	holi:	kəməl	kəməl
rəssi:	rəssi:	həra:	həra:	ghər	ghər
səṛək	sədək	məsa:la:	məsa:la:	pa:s	pa:s
zi:ro	zi:ro	nəzər	nəzər	mez	medʒ
ṭəpək	ṭəpək	kāta:	kata:	ka:t	ka:t
ṭhəhər		mi:ṭha:		pi:ṭh	
ṣəṭkon	bəṭkən	bha:ʃn	bha:bən	ma:nuʃ	ma:nub
cha:r	cha:r	ma:chɪs	ma:chɪs	la:ləch	la:ləch
çətri:	çətri:	kəçhua:	kəçhua:	pū:çh	pū:çh
ʃe:r	ʃe:r	a:ʃa:	a:ʃa:	ta:ʃ	ta:ʃ
dʒəg	dʒəg	ka:dʒəl	ka:dʒəl	su:rədʒ	su:rədʒ
dʒhənda:	dʒhənda:	pətdʒhər		sā:dʒh	
kələm	kələm	pəkər	pəkər	nəmək	nəmək
khətra:	khətra:	məkkhən	məkkhən	bhu:k	bhu:k
ga:l	ga:l	pa:gəl	pa:gəl	ələg	ələg
ghər	ghər	ra:ghəv	ra:ghəv	megh	megh
əmər	əmər	kəmər	kəmər	səməy	səməy
a:g	a:g	ta:ra:	ta:ra:	gəla:	gəla:
ɪmli:	ɪmli:	kɪta:b	kɪta:b	rəvi	rəvi
ī:t	ɪ:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	chup	chup	mədhu	mədhu
ū: ʈ	ū: ʈ	chu:ha:	chu:ha:	sadhu:	sadhu:
e:k	e:k	pe:r	pe:d	ke:le:	ke:le:
ənək	ənək	dəkət	dəkə	mɛ~	mɛ~
o:le	o:le	mo:ta:	mo:ta:	ro:ko:	ro:ko:
ɔrət	ərət	kɔn	kɔn	sɔ	sɔ

TABEL 4.2 (C)

## **CASE STUDIES OF DYSLEXIC CHILDREN**

### **CASE STUDY 1**

**NAME: KSHITIJ**

#### **Linguistic Background:**

- Father's language: Hindi
- Mother's language: Hindi
- Language spoken at home: Hindi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi and English

**Number of siblings: 0**

#### **Medical history:**

- Was born after 5 miscarriages
- Was born through a cesarean delivery
- Was a slow to talk though other learning came at the appropriate time.
- Was not reported for any other disorder

His teachers suspected Kshitij of having dyslexia in the first class. He was asked to get professional help and for this he approached VIMHANS. At VIMHANS he was diagnosed as being dyslexic. The special educator at VIMHANS referred him to an institute, which specialized in the area.

On talking with his mother, I came to know that Kshitij did not speak much on his own. He never initiated a conversation. He liked to keep to himself and was not

interested in any activity that children his age like to do. He could not remember the words that he came across frequently.

Another interesting thing his mother told was the fact that Kshitij had his own repertoire as a child. He would use words like 'chamaka' to refer to motorcycle and 'tamaka' to refer to petrol pump. Though, he could not remember frequently used words, he was interested in advertisements and he remembered even long words associated to the advertisements. Amazingly, he could recall these words on seeing them again without help.

He never had any behavioral problems. A quiet child, who was not at all inquisitive by nature, he could not remember what he said a second ago. He had a definite problem in sequencing the happening in the right order. Even if it was a story well known, and one that he had heard over and over again, he would still not be able to recall and say the right order of the story.

He responded to therapy really well and improved his performance in school. Therapy has also helped him psychologically. He did not recognize fear or react to it. But with therapy he was also able to recognize it and now he reacts to it as other children of his age group do. He also started interacting with his peer group, a phenomena which was absent before he began treatment. He was always a responsible and organized child.

The following table is the response sheet for the English reading test. Each word was read aloud without prompting and the response was recorded verbatim. The responses were then transcribed phonemically.

TABLE 4.1(a)

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>
pæt	bæt	æpl	æpl	tɪp	tɪp
pɪt	pɪt	əpɪər	æpl		
bɪt	tɪb	bʌb(e)l	dʌd(e)l	læmb	læmb
mɪt	tɪm	læmp	læmb	jæm	Jæm
tɒm	tɒm	həʊtəl	həʊl	pɪt	tɪp
tɪk	tɪk	rɪtɜ:n	rəd		
dæd	bæg	raɪd	raɪd	bæd	Bæd
nek	nek	ænt	ænt	pɪn	pɪn
kɪŋ	kɪn	skæt	kæt	blæk	bələk
klaɪm	dɪmb	skhu:l	skhu:l	lʌk	luk
gə:rl	grə:l	lɒŋgər	lɒŋg	bæg	pæg
		fɪŋgər	fɪŋgər	sɪŋ	sɪŋ
fæt	fæt	sɔft	sɔft	li:f	li:f
væn	væn	əʊvər	əʊvər	dʌv	dʌv
sɪp	sɪp	fæst	fæst	pæ:s	bæ:s
zɪp	zɪp	lə:zi:	lə:si:	wɔs	wɔs
θʌm	tʌm	mæθs	mæts	bæθ	bæt
ðɪs	hɪs	mʌðər	mʌðər	wɪð	Wɪt
ʃu:	ʃʊ	mæʃi:n	mæsi:n	fɪʃ	fɪʃ
		ju:ʒuəl	ju	ru:ʒ	r
tʃeə(r)	tʃa:(r)	ti:tʃər	ti:ʃr	rɪtʃ	rɪtʃ
dʒʌg	dʒʌg	pɪdʒɪn	pɪɪɪn	pædʒ	bæg
li:f	li:f	sɔ:lt	sɔ:lt	fi:l	fi:l
rʊf	rʊf	zɪərəʊ	zɪərəʊ	fi:ər	fi:r
ju:	ju:	hju:dʒ	hʌg	pleɪ	Pleɪ

wɒtʃ	wɒt	swim	swim	məʊ	Məʊ
wheɪl	ha:lə	evriweə(r)	verɪverɪ		
hæt	hæt	whɔt	wɔt		
		bɔtl	bɔt		
ɪt	i:t	bɪt	dɪt		
i:t	ɪt	mi:t	wi:t	bɪ	bɪ
eɪt	eɪt	beɪt	bɪt	ðeɪ	ðeɪ
ɛg	ɛg	bɛt	bɛt		
ækt	ækt	pæn	næp		
u:z(ə)	u:s(ə)	bu:t	Bu:t	Blu:	Blu:
		fʊ	fʊ		
ʌvən	ovən	kʌt	kæt		
əʊn	əʊn	kʊ:t	kɒt	gʊ:	Go
all	ɔ:l	bɔ:l	dɔ:l	saw	sɔ:
a:m	a:rm	fɑðər	fɑðər		
əloun	əloun	meləɪ	meldɪ	ðeɪ	ðeɪ
aɪs	aɪs	bɑt	dɪt		
aʊl	oʊl				
ɔɪl	ɔɪl				
<i>Phonemic transcription</i>	<i>Student's response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
ʃɒp	sɒp	pʊʃ	pʊʃ	spʊ:n	səpən
tʃɪn	tʃɪn	rɪʃ	rɪʃ	seɪ	seɪ
θɪn	tɪn	bæ:θ	bæ:θ	bɔi:	bɔi:
mʌðər	mʌðər	wɪð	wɪð	slou	slou
when	wen			bred	bred
sʃʌt	sʃʌt	rʌʃ	rʌs	kʌt	kʌt
				aɪs	aɪs
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>		
stɒp	stɒp	pɪŋk	pɪŋk		
slɪp	slɪp	best	best		

frɔg	frɔg	sænd	sænb
kli:n	kli:n	ɟʌmp	ɟʌmp
gra:s	gra:s	rɪŋ	rɪg
pleɪ	pleɪ	tent	ten
drʌm	brʌm	help	help

The following is the response sheet for Hindi reading test by kshitij.

TABLE 3.1 (b)

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pəvən	pəbən	səpna:	səpna:	a:p	a:pa:
phəl	phəl	səphəl	səphəl		
fəsəl	pha:səl	ma:fi:	ma:f	sa:f	sa:p
bəndər	bəda:	səbəl	səvəl	səb	seb
bha:lu:	bha:lu:	əbhəy	əbhyə	la:bh	la:m
ma:ta:	ma:ta:	səməy	səməy	pərəm	vərəm
vən	Vən	dəva:	dəva:	na:v	vən
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
tho:ra:	jo:ra:	ha:thi:	ha:thi:	ha:th	ha:th
na:k	na:k	ra:ni:	ra:ni:	ka:n	ka:n
lori:	lora:	holi:	holi:	kəməl	kəməl
rəssi:	rəsi:	həra:	həra:	ghər	ghər
səʃək	sədək	məsə:la:	məsə:la:	pa:s	sa:p
zi:ro	zi:ra:	nəzər	nəzər	mez	medʒ
ʃəpək	ʃəpəka:	kāta:	Ka:ta:	ka:t	ka:ta:

ṭhəhər	ṭəhər	mi:ṭha:	mi:ṭa:	pi:ṭh	pi:ṭ
ṣəṭkon	bəṭka:n	bha:ṣn	bhə:sn	ma:nuṣ	ma:nub
cha:r	cha:r	ma:chis	ma:chis	la:lach	la:l
çətri:	çətri:	kəçhua:	kəçhua:	pū:çh	pū:çh
ʃe:r	ʃe:r	a:ʃa:	a:ʃa:	ta:ʃ	ʃa:t
dʒəg	dʒəg	ka:dʒəl	ka:dʒa:l	su:rəɖʒ	su:rəɖʒ
dʒhənda:	dhənda:	pəɖdʒhər	pəɖ	sā:dʒh	sā:dʒh
kələm	kələm	Pəkər	pəkər	nəmək	nəmək
khətra:	kha:tra:	məkkhən	ma:kkha:n	bhu:k	mu:k
ga:l	gə:la:	pa:gəl	pa:ga:l	ələg	a:ləg
ghər	ghər	ra:ghəv	ra:ghəv	megh	meg
əməɾ	əməɾ	Kəməɾ	kəməɾ	səməj	səməja:
a:g	a:g	ta:ra:	ta:r	gəla:	ga:l
ɪmli:	ɪmli:	kɪta:b	kɪta:b	rəvi	ra:vi
ī:t	ɪ:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	Chup	chəp	mədhu	ma:dhu
ū:ṭ	ū:ṭ	chu:ha:	chu:ha:	sadhu:	sadhu:
e:k	e:k	pe:ɾ	pe:d	ke:le:	ke:la:
ənək	na:k	dəkət	daku:	mε~	mε~
o:le	a:lu:	mo:ta:	mo:ta:	ro:ko:	ro:ka:
ɔrət	arət	kən	kan	sɔ	sa:

## CASE STUDY 2

NAME: SAPTRISHI

### **Linguistic Background:**

- Father's language: Hindi
- Mother's language: Hindi
- Language spoken at home: Hindi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi and English

**Number of siblings: 0**

### **Medical history:**

- Did not have any problems during delivery
- He has motor control problem

Saptrishi was said to be suffering from 'language handicap.' I think it probably means that he did not have proper comprehension skills or proper expression skills.

Saptrishi is a dreamer. More often than not he just keeps staring at something that catches his fancy. It's probably because of this that he cannot follow instructions properly.

He doesn't like coloring but he is very creative. He is good at mathematics too. He knows the concept of value combination. He could count the number of objects and tell the correct number and even write them. Though many a times evens when the answer is correct it will not make sense because he will reverse the numbers.

He has good word recognition skills but he does not read them in an appropriate order. Individually he is able to recognize each alphabet but in a cluster he cannot make sense of it. His semantic domain also seems to be restricted as he is not able to connect the mental image of a word to its orthographic representation.

The following table is the response sheet to the reading test that was given to him. He was asked to read the words out aloud without any prompting. His response was then recorded and transcribed phonemically.

TABLE 3.2 (a)

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>
pæt	bæt	æpl	æpl	tɪp	bɪt
pɪt	tɪp	əpɪər	æpl		
bɪt	pɪt	bʌb(e)l	blu:	læmb	læd
mɪt	mɪt	læmp	la:mb	jæm	jæm
tɒm	tɒm	həʊtəl	həʊt	pɪt	bɪt
tɪk	tɪk	rɪtʒ:n	ri:tn		
dæd	bæb	raɪd	raɪd	Bæd	dæd
nek	nesk	ænt	ænt	pɪn	pɪn
klɪmb	klɪmb	skæt	sæt	blæk	blæk
kɪŋ	kɪŋ	skhu:l	səkhu:l		
gə:rl	gəl	lɒŋg:ər	lɒŋg:ər	bæg	dæg
		fɪŋər	fɪŋdʒər	sɪŋ	sɪŋ
fæt	fæt	sɒft	səʊft	li:f	li:əf
væn	væn	ovər	ovər	dʌv	bov

sɔw	wɔs	fæst	fæt	pa:s	pa:s
zip	dʒɪp	leɪzɪ	leɪdʒɪ	wɔs	wɔs
θʌm	tʌmb	mæθs	Mæθs	ba:θ	ba:t
ðɪs	Tɪs	mʌðər	mʌðər	wɪð	wɪð
		ju:zʊəl	u:səl	ru:z	ru:g
tʃeə(r)		ti:tʃr		rɪtʃ	rɪtʃ
dʒʌg	dʒʌg	pɪdʒɪn		pædʒ	bæg
li:f	li:f	sɔ:lt	sɔ:lt	fi:l	fɪl
rʊf	rʊf	zɪərəʊ	dʒɪərəʊ	fi:ər	fʌr
ju:	ju:	hju:dʒ	hʌg	pleɪ	pleɪ
wɒtʃ	wɒtʃ	swɪm	swɪm	məʊ	məʊ
wheɪl	Wəl	evrɪhweər			
Hæt	Hæt	hwɔt	hwɔt		
		bɔtl	bɔtl		
ɪt	ɪt	bɪt	dɪt		
Eat	i:t	mi:t	mi:t	bi:	bi:
eɪt	eɪt	bɛɪt	bæt	ðeɪ	ðeɪ
ɛg	ɛg	bɛt	bɛt		
ækt	ækt	pæn	næp		
u:z(ə)	u:dʒ	bu:t	bu:t	blu:	Blu:
		fu(t)	fu:t		
ʌvən	o:vən	kʌt	kʊt		
əʊn	əʊn	kʊ:t	kʊ:t	gʊ:	gʊ:
ɔ:l	ɔ:l	bɔ:l	pɔ:l	sɔ:	sɔ:
a:m	a:rm	fɑðər	Fɑðər		
ələʊn	ələʊn	meləɪ	meləɪ	ðeɪ	ðeɪ
aɪs	aɪs	bɑɪt	bɑɪt	bɑɪ	bɑɪ
aʊl	aʊl	brʌʊn	brʌʊn	kʌʊ	kʌʊ
ɔɪl	ɔɪl	sɔɪl	sɔl	bɔɪ	bɔɪ
<i>Phonemic Transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>
ʃɒp	sɒp	pʊʃ	bʊs	spʊ:n	spʊ:n

tʃɪn	tʃɪn	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	θɪn	bæθ	bæθ	bɔɪ:	bɔɪ:
mʌðər	mʌðər	wɪð	wɪð	slou	slou
hwɛn	hwɛn			bred	bred
ʃʌt	sʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	aɪs
<i>Phonemic Transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's response</i>		
stɒp	stɒp	pɪŋk	pɪŋk		
slɪp	slɪp	best	best		
frɔːg	frɔːg	sænd	sænd		
kli:n	kli:n	dʒʌmp	dʒʌmp		
gra:s	gra:s	rɪŋ	rɪŋ		
pleɪ	pleɪ	tent	tent		
drʌm	drʌm	help	help		

The next text is the reading test for Hindi. Saptrishi's responses have been produced phonemically.

TABLE 3.2 (b)

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pəvən	bəbən	səpna:	səbna:	a:p	a:pa:
phəl	fəl	səphəl	səfəl		
fəsəl	fa:səl	ma:fi:	ma:fa:	sa:f	sa:p

bəndər	ba:nda:r	səbəl	səvəl	səb	seb
bha:lu:	bha:lu:	əbhəy	əbha:ya:	la:bh	la:m
ma:ta:	ma:ta:	səməy	səməya:	pərəm	bərəm
vən	bən	dəva:	da:va:	na:v	na:va:
ta:ra:	ta:ra:	chətur	chətər	ra:t	ra:t
thora:	tora:	ha:thi:	ha:tha::	ha:th	ha:tha:
na:k	na:k	ra:ni:	ra:na:	ka:n	fa:n
lori:	lora:	holi:	hola:	kəməl	kəməl
rəssi:	ra:sa:	həra:	ha:ra:	ghər	gər
sərək	sədək	məsa:la:	ma:sa:la:	pa:s	sa:f
zi:ro	zi:ra:	nəzər	nəzər	mez	medz
təpək	təpəka:	kāta:	Ka:ta:	ka:t	ka:ta:
thəhər	təhər	mi:tha:	mi:ta:	pi:th	pi:t
şətkon	bətkan	bha:şn	bha:n	ma:nuş	ma:nub
cha:r	cha:r	ma:chıs	ma:chıs	la:lach	la:la:
çətri:	çha:tra:	kəçhua:	kəçhua:	pū:çh	pū:çh
fe:r	fe:r	a:fa:	a:sa:	ta:f	sa:t
dzəg	dzəg	ka:dzəl	ka:dza:l	su:rədz	su:rədz
dzhənda:	dhənda:	pətdzhər	pət	sā:dzh	sā:dzh
kələm	kələm	pəkər	pəkər	nəmək	nəmək
khətra:	kha:tra:	məkkhən	ma:kha:n	bhu:k	mu:k
ga:l	ga:la:	pa:gəl	pa:ga:l	ələg	a:la:g
ghər	ghər	ra:ghəv	ra:gha:v	megh	meg
əmər	a:mər	kəmər	kəmər	səməj	səməja:
a:g	əga:	ta:ra:	ta:ra:	gəla:	ga:la:
ımlı:	ımla:	kıta:b	kıta:b	rəvi	ra:vi
ī:t	ı:t	geri:b	gera:b	na:i:	na:i:
ulət	alət	chup	chəp	mədhu	ma:dh
ū: t	ū: t	chu:ha:	chu:ha:	sadhu:	sadh
e:k	e:k	pe:r	pe:da:	ke:le:	ke:la:
ənək	na:k	dəkət	daka:	mε~	mε~

o:le	o:la:	mo:ta:	mo:ta:	ro:ko:	ro:ka:
ɔrət	a:rət	kɔn	kan	sɔ	sa:

## CASE STUDY 5

Name: VARUN

### Linguistic Background:

- Father's language: Punjabi
- Mother's language: Hindi
- Language spoken at home: Hindi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi and English

Number of siblings: 2

### Medical history:

- Did not have any problems during delivery
- He has been diagnosed as a hyper active child
- He is under medication for the same

Varun is an interactive and extrovert boy. He was 2;5 years old when he started talking. He does exhibit negative behaviour when he feels that he is being ignored. I forgot to mention a fact about him, he is an attention seeker and this negative behavior stems from it. He does not have any concept of day and night. He would associate day with sleep i.e. to say that he would think it was morning if he got up from sleep during night. Even seeing everyone else sleeping would not convince him that it was night. The moment he gets up from sleep, is day for him.

Similarly, he also does not differentiate between yesterday and tomorrow. If some activity takes place the day before for him it is going to happen the day after it

actually happens. His memory seems to have improved after treatment. He also had some problems comprehending the instructions. For example, if he was asked to select a certain item from a box, he would not be able to do it.

One peculiar problem he has is of asking people continuously. He asks your name the moment he meets you and repeats it for conformation. Following which, during the conversation he would repeatedly keep asking your name.

Varun doesn't realize the concept of spacing. He is good at recognizing individual letters, is familiar with blends, though he faces problem of forgetting them right after he identifies them and ends up making errors in reading and writing. He shows definite signs of dyslexia, few as I have mentioned before and this can also be seen in his attempts at comprehending mathematics where we can see omissions and reversals in numbers as well.

The following is his response sheet for the English as well as Hindi language tests.

TABLE 3 (a)

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	Student's Response	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pæt	pæt	æpl	æbl	tɪp	bɪt
pɪt	tɪp	əpɪər	æbl		
bɪt	bɪt	bʌb(e)l	dlu:	læmb	læd
mɪt	mɪt	læmp	la:mb	jæm	jæm
tɒm	tɒm	həʊtəl	həʊt	pɪt	bɪt
trɪk	kɪt	rɪtʒ:n	ri:tn		

dæd	Bæb	raid	raid	bæd	Bæd
nek	nek	ænt	ænt	pɪn	bɪn
klimb	klimd	skæt	sæt	blæk	dælæk
kɪŋ	kɪŋ	skhu:l	səku:l		
gə:rl	gəl	long:ər	lonbər	bæg	dæg
		fiŋər	fiŋdʒər	sɪŋ	sɪŋ
fæt	fæt	sɔft	səuft	li:f	li:əf
væn	væn	ovər	ovər	dʌv	bɒ
sɔw	wɔs	fæst	fæt	pɑ:s	pɑ:s
zip	dʒɪp	leɪzɪ	leɪdʒɪ	wɔs	wɔs
ʃu:	ʃuɒ	mæʃl:n	mɑ:tʃɪn	fɪʃ	
θʌm	θʌmd	mæθs	mæts	bæθ	bæt
ðɪs	tɪs	mʌðər	mʌtər	wɪð	mɪt
		ʃu:zʊəl		ru:z	rob
tʃeə(r)	tʃər	ti:tʃr	ti	rɪtʃ	ri:
dʒʌg	dʒʌg	pɪdʒɪn		pædʒ	bæg
li:f	lɪf	sɔ:lt	sɔ:lt	fi:l	fɪl
rʊf	rʊf	zɪərəʊ	dʒɪərəʊ	fi:ər	fi:r
ju:	ju:	hju:dʒ	hʌg	pleɪ	bleɪ
wɒtʃ	mɒtʃ	swɪm	mɪs	məʊ	mɒm
wheɪl	wəl	evrɪhweər			
hæt	hæt	whɔt	whɔt		
		bɔtl	bɔtl		
ɪt	ɪt	bɪt	dɪt		
eat	i:t	mi:t	mi:t	bi:	di:
eɪt	eɪt	beɪt	dæt	ðeɪ	təɪ
ɛg	ɛg	bɛt	dɛt		
ækt	ækt	pæn	pæn		
u:z(ə)	u:dʒ	bu:t	bu:t	Blu:	Blu:
		fʊ(t)	fʊ:t		
ʌvən	o:vən	kʌt	kʌt		

əʊn	əʊm	kʊ:t	kʊ:t	gʊ:	gʊ:
ɔ:l	a:l	bɔ:l	dɔ:l	sɔ:	sa:
a:m	a:rm	fɑðər	fɑðər		
ələʊn	ələʊn	melədrɪ	melbrɪ	ðərɪ	tərɪ
aɪs	aɪs	bart	darɪ	baɪ	daɪ
aʊl	aʊl	braʊn	braun	kaʊ	kau
ɔɪl	ɔɪl	sɔɪl	sɔɪ	bɔɪ	bɔɪ
Phonemic transcription	Student's response	Phonemic Transcription	Student's Response	Phonemic transcription	Student's response
ʃɔp	sɔp	pʊʃ	bʊs	spʊ:n	sbʊ:n
tʃɪn	kin	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	tɪn	bæθ	dæt	bɔɪ:	dɔɪ:
mʌðər	mʌðər	wɪð	wɪð	sləʊ	sələʊ
when	men			bred	dreb
ʃʌt	ʃʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	ɪs
Phonemic Transcription	Student's response	Phonemic Transcription	Student's Response		
stɒb	stɒp	pɪŋk	bɪŋk		
slɪp	səlɪp	best	dest		
fɹɔg	fərɔg	sænd	sæb		
kli:n	klɪn	dʒʌmp	dʒʌmp		
gra:s	gərə:s	rɪŋ	rɪŋ		
pleɪ	pleɪ	tent	tent		
drʌm	brʌm	help	hel		

The next text is the reading test for Hindi. Varun's responses have been produced phonemically.

TABLE 3 (b)

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pəvən	vəvən	səpna:	səpna:	a:p	a:p
Phəl	fəl	səphəl	səfəl		
fəsəl	fa:səl	ma:fi:	ma:fi:	sa:f	sa:f
bəndər	bədər	səbəl	səvəl	səb	Səb
bha:lu:	ma:lu:	əbhəy	əma:ya:	la:bh	ma:l
ma:ta:	ma:ta:	səməy	səməy	pərəm	Pərəm
vən	vən	dəva:	da:va:	na:v	na:v
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
tho:ra:	to:ra:	ha:thi:	ha:thi:	ha:th	ha:th
na:k	na:k	ra:ni:	ra:ni:	ka:n	fa:n
lori:	lori:	holi:	holi:	kəməl	kəməl
rəssi:	ra:sa:	həra:	ha:ra:	ghər	gər
səɾək	sədək	məsa:la:	ma:sa:la:	pa:s	sa:p
zi:ro	zi:ra:	nəzər	nəzər	mez	medʒ
ɾəpək	ɾəpəka:	kāta:	ka:ta:	ka:t	ka:ta:
ɾhəhər	ɾəhər	mi:ɾha:	mi:ɾa:	pi:ɾh	pi:ɾ
ʂəɾkon	bəɾkən	bha:ʂən	bhə:n	ma:nuʂ	ma:nub
cha:r	dʒha:r	ma:chɪs	ma:chɪs	la:ləch	la:ləch
çətri:	çətri:	kəçhua:	kəçhua:	pū:çh	pu:çh
ʂe:r	ʂe:r	a:ʂa:	a:ʂa:	ta:ʂ	ʂa:t

ɖʒəg	ɖʒəg	ka:ɖʒəl	ka:ɖʒəl	su:rəɖʒ	su:rəɖʒ
ɖʒhənda:	dhənda:	pətɖʒhər	pət	sā:ɖʒh	sa:ɖʒh
kələm	kələm	pəkər	pəkər	nəmək	nəmək
khətra:	khət	məkkhən	məkhən	bhu:k	mu:k
ga:l	ga:l	pa:gəl	pa:gəl	ələg	ələg
ghər	ghər	ra:ghəv	ra:ghəv	megh	megh
əmər	əma:r	kəmər	kəmər	səməy	səməy
a:g	a:g	ta:ra:	ta:ra:	gəla:	gəla:
ɪmli:	ɪmli:	kɪta:b	kɪta:b	rəvi	ra:vi
ĩ:t	ɪ:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	chup	chup	mədhu	ma:dhu
ũ:ɖ	ũ:ɖ	chu:ha:	chu:ha:	sadhu:	sadhu:
e:k	e:k	pe:r	pe:r	ke:le:	ke:la:
ənək	ənək	dəkət	daka:	mɛ~	mɛ~
o:le	o:l	mo:ta:	mo:ta:	ro:ko:	ro:ko:
ɔrət	oərət	kɔn	kan	sɔ	sa:

## CASE STUDY 4

NAME: ANKIT

### **Linguistic Background:**

- Father's language: Punjabi
- Mother's language: Punjabi
- Language spoken at home: Punjabi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi, Punjabi, and English

**Number of siblings: 0**

### **Medical history:**

- There was no complication during birth.
- His mother had three miscarriages before he was born

Ankit is the only child I came across who had severe behavior problems. He is an only child and was born quite late into the marriage. His parents are living in a joint family system. There are many children in the house and they get compared with each other. Ankit looks visibly different from a normal child of his age, as a result he is ridiculed at many occasions by the family members.

On talking to his mother, I came to know that the father also has similar attitude towards him. This is the reason, according to me, for his behavioral problems. He is a moody child and he is very uninterested in doing anything. He can be vocally abusive and can even turn physically abusive at times if threatened. Why he feels that way is not really clear. It has something to do only with his perception.

His school counselor referred Ankit to Educare, an institute for dyslexic children because he was interchanging b with d. He was recommended for a year of remedial training after which, he was told, that he will be completely cured. Even after considerable duration of remedial teaching, he did not show any improvement, rather he started manifesting behavioral changes.

At this point his mother became concerned and took him to VIMHANS where they confirmed him to be a dyslexic child, wherein he was referred to Manas. He has been at Manas for about six months and one can see quite a bit of change in him.

He does not follow instructions probably because he is not able to comprehend them properly. If given a task he does not complete it. He gets easily bored and constantly shifts his attention. I believe that he is an hyper active child, though he has not been diagnosed as one. In the social arena, he is not comfortable with anyone except his mother. He has no friends at all. he is not even friendly with his own cousins.

Ankit was asked to read the test for English as well as Hindi. He took the longest time to finish with the tests. Table 4 (a) is his response sheet for English test and Table 4 (b) is his response sheet for Hindi language.

TABLE 4(a)

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic Transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pæt	bæt	æpl	æbl	tɪp	pɪt
pɪt	pæt	æpɪər	æpl		
bɪt	dɪt	bʌb(e)l	dlu:	læmb	læd
mɪt	mæt	læmp	la:m	jæm	jæm
tɒm	tɒm	həʊtəl	hɔtl	pɪt	pet
tɪk	kɪt	rɪtʒ:n	rɪtreɪn		
dæd	da:da	raɪd	raɪq	bæd	dæd
nek	nek	ænt	næt	pɪn	pen
kɪmb	kɪmd	skæt	kæt	blæk	dəlæk
kɪŋ	kændʒ	skhu:l	shu:l		
gə:rl	gəl	lɒŋg:ər	lɒŋg	bæg	dæg
		fɪŋər	fɪnə:	sɪŋ	sɪŋ
fæt	fæt	sɒft	səuft	li:f	læf

væn	væn	ovər	ovər	dʌv	dɒg
sɔw	wɔs	fæst	fæt	pɑ:s	bɑ:s
zɪp	zɪd	leɪzɪ	leɪdʒɪ	wɔs	wɔʃ
ʃu:	ʃu:	mæʃi:n	mɑ:tʃɪn	fɪʃ	fɪʃ
θʌm	tθʌd	mæθs	mæts	bæθ	bæt
ðɪs	hɪs	mʌðər	mʌtər	wɪð	wɑɪt
		ju:zuəl	juəl	ru:z	ru:dʒ
tʃeə(r)	tʃər	ti:tʃr	ɪt	rɪtʃ	rɑɪ
dʒʌg	dʒʌg	pɪdʒɪn	pɪg	pædʒ	bæg
li:f	lɪf	sɔ:lt	sɑ:lt	fi:l	fɪl
rʊf	rʊf	zɪərəʊ	dʒɪərəʊ	fi:ər	fi:r
ju:	ju:	hju:dʒ	hu:g	pleɪ	bleɪ
wɒtʃ	mɒt	swɪm	mɪs	məʊ	mɒm
wheɪl	wəl	evrɪhweər			
hæt	hæt	whɔt	whɔt		
		bɔtl	bol		
ɪt	ɪt	bɪt	dɪt		
eat	i:t	mɪ:t	mæt	bi:	di:
eɪt	eɪt	bɛɪt	dæt	ðeɪ	tɛɪ
ɛg	ɛg	bɛt	dɛt		

ækt	sæt	pæn	pæn		
u:z(ə)	u:ɟ	bu:t	bu:t	blu:	du:
		fʊ(t)	fu:t		
ʌvən	ovən	kʌt	kʊt		
əʊn	əʊm	kʊ:t	kʊ:t	gʊ:	gʊ:
ɔ:l	a:l	bɔ:l	dɔ:l	sɔ:	wɔs
a:m	a:rm	fɑðər	fatər		
əleʊn	əleʊn	melədɪ	meldɪ	ðeɪ	ðeɪ
aɪs	aɪs	bart	dart	baɪ	daɪ
Aʊl	aʊl	braʊn	draʊn	kaʊ	kau
ɔɪl	ɔɪl	sɔɪl	sɔɪl	bɔɪ	dɔɪ
Phonemic Transcription	Student's response	Phonemic Transcription	Student's response	Phonemic transcription	Student's response
ʃɔp	ʃɔp	pʊʃ	pʊʃ	spʊ:n	spʊ:n
tʃɪn	kin	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	θɪn	bæθ	Bæθ	bɔi:	bɔi:
mʌðər	mʌðər	wɪð	wɪð	slou	slou
When	hen			bred	dreb
ʃʌt	ʃʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	aɪs
Phonemic	Student's	Phonemic	Student's		

Transcription	response	transcription	response
Stɒp	stɒp	pɪŋk	pɪŋk
slɪp	slɪp	best	dest
frɔg	frɔg	sænd	sæd
kli:n	klɪn	dʒʌmp	dʒʌmp
gra:s	gra:s	rɪŋ	rɪŋ
pleɪ	pleɪ	tent	tent
drʌm	drʌm	help	help

The next text is the reading test for Hindi. Ankit responses have been produced phonemically.

TABLE 4(b)

WORD LIST OF HINDI LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic Transcription</i>	<i>Student's response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>

pəvən	Pəvən	səpna:	Səpna:	a:p	a:p
Phəl	fəl	səfəl	Səfəl		
fəsəl	ka:səl	ma:fi:	ma:ki:	sa:f	sa:k
bəndər	bədər	səbəl	Səbəl	səb	səb
bha:lu:	bha:lu:	əbhəy	əbha:y	la:bh	bha:l
ma:ta:	ma:ta:	səməy	səməs	pərəm	pərəm
vən	vən	dəva:	da:va:	na:v	na:v
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
thoṛa:	toṛa:	ha:thi:	ha:thi:	ha:th	ha:th
na:k	na:f	ra:ni:	ra:ni:	ka:n	fa:n
lori:	lori:	holi:	holi:	kəməl	fəməl
rəssi:	ra:sa:	həra:	ha:ra:	ghər	gər
səṛək	sədəf	məsə:la:	ma:sa:la:	pa:s	sa:f
zi:ro	zi:ra:	nəzər	nədzər	mez	medz
ṭəpək	ṭəpək	mi:ṭha:	mi:ṭha:	pi:ṭh	pi:ṭh
şəṭkon	bəṭkən	bha:şən	bhə:n	ma:nuş	ma:nub
cha:r	dʒha:r	ma:chis	ma:chis	la:ləch	la:ləch
çətri:	çha:tra:	kəçhua:	fəçhua:	pū:çh	pū:çh
ʃe:r	ʃe:r	a:fa:	a:sa:	ta:f	sa:t
dʒəg	dʒəg	ka:dʒəl	fa:dʒəl	su:rədz	su:rədz
dʒhənda:	dhənda:	pətdʒhər	pət	sā:dʒh	sa:s

kələm	fələm	pəkəɾ	pəkəɾ	nəmək	nəmək
khətra:	khətər	məkkhən	məkhən	bhu:k	bhu:k
ga:l	ga:l	pa:gəl	pa:gə:la:	ələg	ələg
ghər	ghər	ra:ghəv	ra:ghəv	məgh	məg
əmər	əma:r	kəmər	kəmər	səməj	səməj
a:g	a:g	ta:ra:	təra:	gəla:	gəla:
ɪmli:	mɪli:	kɪta:b	kɪta:b	rəvi	ra:vi:
ī:t	ɪ:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	chup	chup	mədhu	
ū:ɟ	ū:ɟ	chu:ha:	chu:ha:	sadhu:	
e:k	e:k	pe:ɾ	pe:d	ke:le:	ke:le:
ənək	ənə:k	dəkət	dəkə	mɛ~	mɛ~
o:le	o:l	mo:ta:	mo:ta:	ro:ko:	ro:ka:
ɔrət	ərət	kən	kan	sɔ	sɔ

## CASE STUDY 5

NAME: SARABJEET

AGE: 8 years

### Linguistic Background:

- Father's language: Punjabi
- Mother's language: Punjabi
- Language spoken at home: Punjabi
- Languages spoken at school: Hindi and English
- Languages spoken among peer group: Hindi, Punjabi, and English

Number of siblings: 2

### Medical history:

- Sarabjeet has motor control problems. He is unable to hold pencil straight for a long duration of time.

Sarabjeet is eldest child and he is a very nice and mannered boy. When he was in class 2 his teacher kept complaining that he would not listen to her and that he would not read the work that she gave him correctly. His parents thought it to a normal occurrence and engaged a tutor for him. There was no obvious improvement though the tutor also complained that he did not remember what was said even a minute earlier.

Concerned about this unusual learning pattern, they talked to the school teachers and eventually decided to take him to a psychologist at VIMHANS. There he was diagnosed as being a dyslexic and they advised remedial teaching. He then approached Manas for the same.

Sarabjeet constantly seeks approval for every small thing that he does, even if it is as small and insignificant as identifying an alphabet. He does not follow the instruction in a sequence. Even in mathematics he tends to interchange the numbers. Interestingly when he was reading the word to himself he recognized all the alphabets individually but read the word wrong.

As the others he was asked to read and write the test for both the languages. Table 5 (a) is the response sheet for the English reading test. The test as well as the responses have been transcribed phonemically.

WORD LIST OF ENGLISH LANGUAGE					
INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pæt	pæt	æpl	æbl	tɪp	pɪt
pɪt	pæt	æpɪər	æpr		

bɪt	dɪt	bʌb(e)l	bʌləb	læmb	læd
mɪt	mæt	Læmp	la:m	jæm	jæm
tɒm	tɒm	həʊtəl	həʊtl	pɪt	bet
tɪk	tɪk	rɪtʒ:n	ri:tən		
dæd	Dæd	raɪd	rəd	bæd	dæd
nek	nek	ænt	æt	pɪn	nɪp
kɪŋ	kɪŋg	skæt	sæts	blæk	Blæk
klɪmb	klɪmb	skhu:l	skhu:l	lʌk	luk
gə:rl	gə:rl	lɒŋgə(r)	lɒŋg	bæg	bæg
		fɪŋər	fɪnə:	sɪŋ	sɪŋ
fæt	fæt	sɔft	səʊft	li:f	li:af
væn	væn	ovər	ovər	dʌv	dovi:
sɔw	sɔ	fæst	fæt	pɑ:s	bɑ:s
zɪp	zɪb	leɪzɪ	leɪdʒɪ	wɔs	wɔʃ
ʃu:	ʃoi:	mæʃi:n	mæki:n	fɪʃ	fɪʃ
θʌm	tʌd	mæθs	mæts	bæθ	bæt
ðɪs	hɪs	mʌðər	mʌðər	wɪð	waɪt
		ju:zuəl	juəl	ru:z	ru:dʒ
tʃeə(r)	tʃər	ti:tʃr	ti:kər	rɪʃ	ri:tʃ
dʒʌg	dʒʌg	pɪdʒɪn	pɪɡɪn	pædʒ	bæg

li:f	li:f	sɔ:lt	sa:lt	fi:l	fi:l
ruf	ruf	ziərəʊ	ziərəʊ	fiər	fiər
ju:	ju:	hju:ɔʒ	hʌgə	pleɪ	fiər
wɒtʃ	mɒt	swim	sɪm	məʊ	mɒm
wheɪl	waiɪl	evrihwɛər	evrivi:r		
hæt	hæt	whɔt	hæt		
		bɒtl	bɒtl		
ɪt	ɪt	bɪt	bɪt		
eat	i:t	mi:t	mæt	bi:	di:
eɪt	eɪt	bɛɪt	dæt	ðɛɪ	tɛɪ
ɛg	ɛg	bɛt	dɛt		
ækt	ækt	pæn	pæn		
u:z(ə)	u:ɔʒ	bu:t	bu:t	blu:	bəlu:
		fʊ(t)	fʊ(t)		
ʌvən	ovən	kʌt	kʌt		
əʊn	ən	kju:t	kju:t	gu:	gu:
ɔ:l	a:l	bɔ:l	pɔ:l	sɔ:	sa:
a:m	a:rm	fɑðər	fɑðər		
əleʊn	əleʊn	melɛɪ	melɛɪ	ðɛɪ	ðɛ
aɪs	i:s	bɑɪt	dɑɪt	bɑɪ	dɑɪ

aʊl	aʊl	braʊn	draʊn	kaʊ	kaʊ
ɔɪl	ɔɪl	sɔɪl	sɔɪl	bɔɪ	dɔɪ
Phonemic Transcription	Student's response	Phonemic transcription	Student's response	Phonemic transcription	Student's response
ʃɔp	sɔp	pʊʃ	pʊʃ	spu:n	spu:n
tʃɪn	ʃɪn	rɪtʃ	rɪtʃ	seɪ	seɪ
θɪn	tɪn	bæθ	dæt	bɔi:	dɔi:
mʌðər	mʌðər	wɪð	mɪt	slou	lou
when	wen			bred	dreb
ʃʌt	sʌt	rʌʃ	rʌʃ	kʌt	kʌt
				aɪs	ɪs
Phonemic Transcription	Student's response	Phonemic transcription	Student's response		
stɒp	tɒps	pɪŋk	pɪŋk		
slɪp	səlɪp	best	dest		
frɔg	frɔg	sænd	sæd		
kli:n	kɪn	dʒʌmp	dʒʌmp		
gra:s	gra:s	rɪŋ	rɪŋ		
pleɪ	bleɪ	tent	tent		
drʌm	qrʌm	help	help		

The next text is the reading test for Hindi. Ankit responses have been produced phonemically.

## WORD LIST OF HINDI LANGUAGE

INITIAL POSITION		MEDIAL POSITION		FINAL POSITION	
<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>	<i>Phonemic transcription</i>	<i>Student's Response</i>
pəvən	pəbən	səvna:	səpna:	a:p	a:p
phəl	həl	səfəl	səhəl		
fəsəl	sa:səl	ma:fi:	ma:fi:	sa:f	sa:fi:
bəndər	bədər	səbəl	səvəl	səb	səb
bha:lu:	bha:la:	əbhəy	əma:y	la:bh	bha:l
ma:ta:	ma:ta:	səməy	səməy	pərəm	vərəm
vən	na:v	dəva:	da:va:	na:v	vən
ta:ra:	ta:ra:	chətur	chətur	ra:t	ra:t
thoṛa:	toṛa:	ha:thi:	ha:tha:	ha:th	ha:th
na:k	na:f	ra:ni:	Na:ri:	ka:n	ka:n
lori	lori:	holi:	holi:	kəməl	kəməl
rəssi:	rəssa:	həra:	ha:ra:	ghər	gər
səṛək	sədək	məsa:la:	məsa:la:	pa:s	ba:s
zi:ro	zi:ri:	nəzər	nəzər	mez	medʒ

ṭəpək	ṭhəpək	kāta:	kata	ka:t	kat
ṭhəhər	bəṭka:n	mi:ṭha:	mi:ṭha:	pi:ṭh	pi:ṭh
ṣəṭkon	bəṭkən	bha:ṣən	bha:bən	ma:nuṣ	ma:n
cha:r	cha:r	ma:chis	ma:chəs	la:ləch	la:ləch
çətri:	çha:tri:	kəçhua:	kəçhua:	pū:çh	pu:çh
je:r	je:r	a:fa:	a:sa:	ta:f	sa:t
dʒəg	dʒəg	ka:dʒəl	ka:dʒal	su:rəɖʒ	su:rəɖʒ
dʒhənda:	dʒhəda:	pətdʒhər	pətər	sā:dʒh	sa:s
kələm	kələm	pəkər	pəkər	nəmək	nəmək
khətra:	Kha:ta:ra:	məkkhən	məkkhən	bhu:k	bhu:k
ga:l	ga:la:	pa:gəl	pa:ga:la:	ələg	ələg
ghər	ghər	ra:ghəv	ra:ghəv	megh	megh
əmər	əmər	Kəmər	kəmər	səməy	səməy
a:g	a:g	ta:ra:	ra:t	gəla:	gəla:
ımlı:	mıli:	kıta:b	kıta:b	rəvi	rəv
ĩ:t	ı:t	geri:b	geri:b	na:i:	na:i:
ulət	ulət	chup	chup	mədhu	madu:
ũ:ṭ	ũ:ṭ	chu:ha:	chu:ha:	sadhu:	sa:du:
e:k	e:k	pe:ṭ	pe:re:	ke:le:	ke:le:
ənək	e:nə:k	dəkət	da:ke:t	mε~	mε~
o:le	o:l	mo:ta:	mo:ta:	ro:ko:	ro:ko:

ɔrət	rət	kɔn	kan	sɔ	so:
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## **CHAPTER FOUR ANALYSIS**

The data was collected from two different groups. The control group consisted of non-dyslexic children and the other group was the one who were identified as dyslexics, at VIMHANS. The same tests were given to both the groups: to read and to write. The control group was taken to do away with all the possible mistakes, which need not necessarily be a dyslexia specific mistake, but would be common to all the children in the age bracket of 7-9 years old.

The **control test** indicated some of the words included in the test were “invalid entries” because of the following reason:

◆ **Semantic reasons**

Words such as *mitt, usual, melody, mow, dove* did not immediately form a mental image in the mind of the child, as a result the child was not able to comprehend these words. These mistakes were happening in the control group as well. This automatically meant that a dyslexic child’s already existing comprehension problem becomes more compounded on coming across such words.

◆ **Phonological reasons**

Words such as *climb, thumb* has a silent letter at the end of the word and many adults even pronounce these with the silent letter. Therefore, these words are confusing to the child. It also has mainly to do with the school teaching because sometimes these words are taught to be pronounced like this. Though the control test indicated that these words posed no serious problems for the control group, this was not so with the dyslexic children

Words such as *whale, pigeon* are difficult to read with the phonetic sounds too. The child gets accustomed to hearing these words and by way of picture connection he is able to recognize and memorize these words. These

words are mainly taught as sight words and they do not learn how to spell the words until later. Though the children in the control group could semantically comprehend the pigeon and also make a phonetic-orthographic correlation of the word, they were not able to do this for whale. Writing both these words were difficult.

◆ **Both Semantic and Phonological reasons**

Words like rouge, ooze, huge, everywhere and awe were included only due to the reason that I was not able to find any other words for the particular phonemes they represent. I realized that these words were not necessarily valid for this age group. Though the control group was able to identify the semantic meaning of these words when it was told to them, they were not able to make either phonetic or orthographic correlation. Words like usual, rouge and ooze were not at all comprehensible to them.

◆ **Orthographic (spelling) reasons**

Words like bubble, bread, oven, the words with -ck ending like tick, or black, words with the 'r' silent in them as in arm and return, words with the silent 'e' in the end as in dove, alone, page ..etc. could also pose difficulty for the child because of the confusing spellings. English language does not necessarily follow the phonetic sound patterns in all the words. Quite a number of words in English language are taught orthographically. This stage probably develops after a number of years in schools. This group had yet to reach this stage.

The other words with non-phonetic correspondences such as cow etc. are spelt correctly because of the frequency of occurrence of such words in the child's everyday repertoire. These words may be owl, drum, cow, hotel, lamb, boot, foot,

and ball. Etc. There are some other words which the child could identify just by the following the phonic code, for e.g. mother, father, chin, boy, with, oil, watch, eight, black etc. due to the reason that they come across these words fairly frequently in the class or through other mediums. Therefore, the words that were expected to pose a problem to these children in reading and writing, turned out to be generally correct because of the frequency of occurrence in their books or their environment.

Similarly, the Hindi language test given to the control child also gave a few invalid entries, which are classified below:

◆ Semantic reasons

Words like səbəl, pərəm , bha:ʃn, ma:nuʃ ,dəkət are those they might have heard as a child. These words may not easily understood or related to it semantically. The frequency of occurrence of these words might have been more, but they have no place in the verbal repertoire,

◆ Phonological reasons

There are some words, which are difficult to read because of a break in the phonological pattern of the word. For e.g. words like ulət, bhu:k are difficult to read phonologically???

◆ Semantic and phonological reasons

Some words were found to be invalid due to both of the above reasons. They were lacking phonological correlation as well were not able to establish any semantic domain of these words. This group included words like pətɔʒhəʃ, ʃətʃkon, sā:ɔʒh etc.

◆ Orthographic (spelling errors)

The errors of this kind could be because of any one of the following:

- a) use of /s/, or /š/ in place of /ʃ/ as in ma:nuʃ, ʃəʈkon, bha:ʃn etc
- b) use of /f/ in place of /ph/ as in phəl or səphəl
- c) use of /š/ both for /š/ and /ʃ/
- d) use of /d/ for /r/ as in peʃ
- e) use of /r/ for both /r/ and /rh/

The substitutions such as the ones shown above, also occur in adult speech.

The control test thus prewarned us against considering the use of such misspellings and miss readings as indicators of dyslexia. If these are the kind of mistakes that a child without reading disabilities would make, then under no circumstances could they be considered as indicators of dyslexia. Therefore, these words were not taken into consideration for identification of dyslexic reading tendencies.

Apart from the stated and similar errors the rest of the usage by the subjects 3-8 were classified on the basis of

(a) Reading – Writing errors

(Reception vs. Production errors)

(b) Phonetic vs. Orthographic

(miss readings (as in reading test) vs. (miss representations (as in writing test))

(c) types of errors- such as:

omission, additions, metathesis, substitutions.

All the case studies individually have been analyzed with respect to these three parameters. The first parameter has been explained in detail in Chapter 3, where their response sheets have been presented. In this chapter, under each individual case, I will give a summation of the response sheets in Chapter 3. This will be followed by the analysis of the errors under the heading of Phonetic errors and Orthographic errors. This will be followed by a summation of the tables where I will talk about which kind of errors are predominant in each case.

## CONTROL GROUP ANALYSIS

### CASE 1: ABHAY

The following table is the analysis of the reading test for English language.

TABLE 4.1 (a)

Phonetic analysis			
Metathesis /Reversal	Substitution	Omission	Addition
sɔɪl-sɔɪ	æpiər-æpr	sænd-sæd	dʌv-dovi:
	həʊtəl-həʊl		
	ri:tʃn-ri:tən		
	skæt-sæt		
	ju:ʒuəl-juəl		
	ru:ʒ-rog		
	ti:tʃr-ti:kər		
	pɪdʒɪn-pɪgɪn		

	hju:dʒ-hʌjə		
	məʊ-məʊv		
	wheɪl-waɪl		
	evrɪhweər- evrɪvɪ:r		
	əʊn-ɒn		
	ɔ:l-a:l		
	aʊl-ouɫ		
	a:m-a:rm		
	kli:n-klɪn		
	rɪŋ-rɪn		

TABLE 4.1 (b) is the analysis of the written test in English.

Written test analysis			
Metathesis	Substitution	<i>Omission</i>	Addition
	appear-aper	arm-am	slow-selow
	bubble-bubl		
	hotel-hot		
	tick-tik		
	return-retn		
	scat-cat		
	dove-dov		
	Everywhere- veriver		
	Alone-alon		

	melody-melodi		
	bait-baet		
	clean-kleen		
	ring-rin		
	bread-brad		

The following table shows the analysis of the reading test for Hindi.

TABLE 4.1 (b)

Analysis reading test			
Metathesis /Reversal	Substitution	Omission	Addition
	phəl-fəl		pətədzhər
	səphəl-səfəl		ma:kkha:n
	thoɾa:-toɾa:		
	səɾək-sədək		
	sā:dʒh-sa:dʒh		
	ʃətkon-bətkən		
	bha:ʃn-bha:bən		
	ma:nuʃ-ma:nub		
	pe:r-pe:d		
	dəkət-dəkə		

TABLE 4.1 (d)

Analysis written			
Metathesis /Reversal	Substitution	Omission	Addition
	mez-medʒ		pətədzhər-

			pətdʒər
	ʃətkən-ʃətkən		
	bha:ʃn-bha:ʃən		
	ma:nuʃ-ma:nuʃ		
	sā:dʒh-sa:dʒ		
	dəkət-dəkət		

**CASE 2: JĀTIN**

The first table will show the analysis for English reading test.

TABLE 4.2 (a) English

Analysis reading test			
Metathesis /Reversal	Substitution	Omission	Addition
	əpɪər-æpr		pətdʒhər- pətdʒər
	həʊtəl-həʊtl		
	rɪtʃ:n-rɪtn		
	Skæt-sæt		
	lɒŋgə(r)-lɒŋg		
	fɪŋər-fɪnər		
	mæʃi:n-məsi:n		
	ju:ʒuəl-ju:l		
	ru:ʒ-rog		

The next table is the English written test

TABLE 4.2 (b)

Written test analysis			
Metathesis /Reversal	Substitution	Omission	Addition
	appear-aper	arm-am	slow-selow
	bubble-bubl	when-wen	
	hotel-hot	bread-brad	
	tick-tik		
	return-ritn		
	scat-cat		
	finger-finr		
	dove-dov		
	machine-mashin		
	thumb-thamb		
	ju:zuəl-ju:l		
	ru:ʒ-rug		
	teacher-techer		
	pigeon-pigan		
	page-paj		
	huge-huj		
	mow-mo		
	whale-wail		
	everywhere- veriver		
	alone-alon		
	melody-melodi		
	bait-baet		

	clean-kleen		
	ring-rin		
	bread-brad		

TABLE 4.2 (c) Hindi

Analysis reading test			
Metathesis /Reversal	Substitution	Omission	Addition
	phəl-fəl		pətdʒhər- pətdʒhər
	səphəl-səfəl		
	thoɾa:-toɾa:		
	səɾək-səpək		
	sā:dʒh-sa:dʒh		
	ʃətkon-bətkən		
	bha:ʃn-bha:bən		
	ma:nuʃ-ma:nub		
	pe:ɾ-pe:d		
	dəkət-dəkə		

TABLE 4.2 (d) Hindi written test

Analysis written test			
Metathesis /Reversal	Substitution	Omission	Addition
	mez-medʒ		pətdʒhər- pətdʒər
	ʃətkon-ʃətkən		
	bha:ʃn-bha:ʃən		

	ma:nuʃ-ma:nuʃ		
	sā:dʒh-sa:dʒ		
	dəkət-dəkət		

The response sheets of the control group children point out the errors. These words will not be included in analyzing the dyslexic children's responses.

## ***ANALYSIS OF DYSLEXIC CASE STUDIES***

### **CASE 1**

The table for the first parameter is given in detail in the previous chapter.

Kshitij has attempted to read all the words. He at time substitutes /b/ for /p/. since /p/ if inversed would look like /b/ this has been termed under orthographic error. Since what he has done here is changed /p/ to /b/ without changing the word in any way. This is substitution error, therefore it has been classified as an orthographic error of substitution type.

TABLE 4.1 (a) English reading test

Analysis (Phonetic errors)			
<b>Metathesis</b>	<b>Substitution</b>	<b>Omission</b>	<b>Addition</b>
grə:l	ləmb	kɪn	bələk
	lə:si:	fi:r	sətɒp
	ʃu	mæts	səlip

	ti:fr	meldr	færɔg
	wɔt	ten	
	bɔt	bæt	
	ɪt	wɪt	
	kæt	hɪs	
	sɔp	tʃa:(r)	
	səpən		
	rʌs		
Analysis(orthographic errors)			
Metathesis	Substitution	Omission	Addition
trɪb	bæt	hɔt	
tɪm	læmb	kɔt	
tɪp	dɪmb	wɔt	
bæq	pæg	bɔt	
dɪt	bʌv	kɔt	
næp	bæ:s		
dɔ:l	wɪ:t		
dɪt	ovən		
tɪm	dɔ:l		
	dɪt		
	oul		
	sænb		
	brʌm		

TABLE 4.1 (b) Written test English

Analysis (phonetic errors)			
metathesis	Substitution	omission	Addition

map	red	gil	
tip	dav	sin	
nip	skul	pas	
	leef	chare	
	saft	lef	
	dis	fel	
	Mat	rof	
	wit	met	
	shu	sa	
	solt	sow	
	fier	bet	
	ziro	sad	
	wat	gras	
	aven	rin	
	on	ten	
	cot		
	alon		
	aol		
	spun		
	wen		
orthographic analysis			
metathesis	substitution	omission	Addition
dat	baq		
dit	dad		
cat	dag		
det	lazi		
ban	baj		
belu	blay		
was	dal		
	dit		
	doy		

TABLE 4.1 (c) Reading test Hindi

Phonological Analysis			
Metathesis	Substitution	Omission	Addition
	pəbən	ma:f	seb
	pha:səl	bəda:	səməya:
	səvəl	bhə:lu:	da:va:
	vərəm	əbhyə	ha:thi:
	lora:	mə:ta:	ha:ra:
	zi:ra:	ta:r	təpəka:
	mi:ṭhi:	chətər	gə:la:
	çha:tra:	rəsi:	pa:ga:l
	a:sa:	məsla:	səməja:
	dhənda:	pət	ra:vi
	te:ra:	meg	
	ke:la:	ga:l	
	na:k	chəp	
	daku:	arət	
	a:lu:		
	ro:ka:		
	kan		
	sa:		
Orthographic Analysis			

Metathesis /Reversal	Substitution	Omission	Addition
	sa:p	vən	pa:ni:
	la:m	la:l	
	mu:k		
	bən		
	jo:ra:		
	bəʈka:n		
	ma:nub		
	sa:t		
	pe:d		

TABLE 4.1 (d)  
Written test Hindi

Analysis (phonological errors)			
Metathesis	Substitution	Omission	Addition
va:n	paban	ma:f	fa:sal
sa:p	fal	ta:r	Seb
ʃa:t	safal		ʈapaka:
	bada:		ka:dʒa:l
	varam		gala:
	da:va:		a:leg
	chatar		
	la:ra:		
	rasi:		
	zi:ra:		
	la:l		
	Pu:çh		
	dhanda:		
	sa:dʒh		
	Kha:tra:		

	meg		
	Ra:vi		
	i:t		
	ma:dhu		
	U: t		
	pe:d		
	Ke:la:		
	na:k		
	daku:		
	a:lu:		
	ro:ka:		
	a:ret		
	kan		
	sa:		
	sa:		
Analysis (orthographic)			
Metathesis	Substitution	Omission	addition
	sa:p		
	sevel		
	la:m		
	jora:		
	sedek		
	se:r		
	a:sa:		
	sa:t		
	mu:k		

**CASE 2**

Saptrishi generally tends to make more phonetic based errors when compared with orthographic errors. He also tend to add an extra /ə/ at many places and he also interchanges or misses words from in-between the word.

TABLE 4.2 (a)  
Reading test English

phonetic analysis			
metathesis	Substitution	Omission	Addition
brt	bæt	sæt	bəlæk
trp	blu:	gəl	səkhu:l
krt	læd	fæt	səlɪp
bæb	la:mb	gəl	fərcɔg
dæd	pɪt	mɪs	gərə:s
sɔw	ri:tn		
mit	səuft		
	li:əf		
bus	dʒɪp		
	leɪdʒɪ		
	tɪs		
	wɪt		
	fɪl		
	dʒɪərəʊ		

	fʌr		
	bleɪ		
	bæt		
	fʊ:t		
	o:vən		
	kʊt		
	kæt		
	sɒp		
<b>Orthographic Analysis</b>			
	Substitution	<i>Omission</i>	Addition
<i>bad</i>	bæb		
dag	dæd		
cat	<i>dæg</i>		
	pɔ:l		

TABLE 4.2 (b)  
Written test English

Analysis (phonetic errors)			
Metathesis	Substitutions	<i>Omissions</i>	Addition
nip	lamb	lam	
forg	lasy	raid	
gars	shu	skul	
pen	solt	blak	
	jero	gil	
	ate	sot	

	ais	lef	
	oul	fat	
	sop	mats	
	sai	bat	
	sut	char	
	rosh	fel	
	slep	fia	
		botl	
		met	
		am	
		bit	
		soon	
		slo	
ORTHOGRAPHIC ERRORS (Written test)			
Metathesis	Substitution	Omission	Addition
pit	smim	dat	paass
mit	dit	bron	saand
	det	van	
	dall	on	
	dit		
	doy		
	dest		
	bad		
	dab		
	pag		
	pit		
	det		
	dy		

Reading test Hindi

TABLE 4.2

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
sa:p	ra:sa:	bədər	da:va:
	gər	ka:ta:	ha:ra:
	zi:ra:	dhənda	ʈəpəka:
	ke:la:	khət	ka:ta:
	ənək	daka:	ra:vi
	orət	o:l	ma:dhu
		Kan	
		sa:	
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
ma:l	vəvən		əma:ya:
	səvəl		
	ma:lu:		
	əma:ya:		
	fa:n		
	dʒha:r		
	mu:k		

Writing test Hindi

TABLE 4.2 (b)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
sa:p	ra:sa:	bədər	da:va:
	gər	ka:ta:	ha:ra:
	zi:ra:	dhənda	ʈəpəka:
	ke:la:	khət	ka:ta:
	ənək	daka:	ra:vi
	orət	o:l	ma:dhu
		kan	cha:ra

		sa:	
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
ma:l	pəvən		əbha:ya:
	səvəl		i:mli:
	ma:lu:		
	əma:ya:		
	fa:n		
	mu:k		
	ki:tab		

### CASE 3

Varun's reading and writing tests have been analyzed below.

Reading test for English

TABLE 4.3 (a)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
tɪp	səʊft	Mæts	səku:l
wɔs	dʒɪp	bæt	li:əf
	leɪdʒɪ	mætər	ʃuə
	rɒb	tʃər	sələʊ
	lɪf	fɪ:r	səlɪp
	so:lt	tər	færɔg
	fɪl	kin	
	dʒɪrərʊ	tɪn	
	o:vən		
	a:l		
	sa:		
	sɔp		
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition

bit (tip)	la:mb	læd	dælæk
bit (pit)	bɪn	gəl	
dit	dæg	fæt	
	bleɪ	mɪt	
	mɒtʃ	mɪs	
	mɒm	dæt	
	di:		
	dæt		
	dɔ:l		
	bʊs		
	bæb		
	sbʊ:n		
	dɔi:		
	bɪŋk		
	dest		
	sæb		

### Written English tests

Analysis (written test)			
Metathesis	Substitution	Omission	Addition
pit	pet	rid	sekol
grel	dit	back	
fil	lamp	mats	
mas	bit	bats	
mit	qaq	moter	
tib	dad	wat	
	longer	mo	
	pag	van	
	soft	am	
	jip	mis	
	su		
	chare		
	weet		
	bed		

	ban		
--	-----	--	--

Reading test Hindi

TABLE 4.3 (b)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
bes	ri:si:	bədər	da:va:
na:k	gər	ka:ta:	ha:ra:
ta:ra:	zo:ro:		ʈəpəka:
sa:p	ka:la:		ka:ta:
	ənək	daka:	ra:vi
	orət	o:l	ma:dhu
	ra:nɪ	kən	ra:gha:v
	mɪʈɦɪ		ma:chas
	ra:ka:		kha:tra:
	sa:ra:ɖʒ		
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
ma:l	vəvən	dhənda	əbha:ya:
	səvəl		
	ma:lu:		
	əma:ya: \		
	fa:n		
	ɖʒha:r		

CASE 4:

Analysis of Ankit's response sheet of the Hindi and English tests is given below.

Reading test English

TABLE 4.4 (a)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
pɪt	pæt	rəd	səku:l
nɪp	bet	æt	li:af
wɔs	səʊft	lɒŋ	ʃoi:
	leɪɖʒɪ	sɔ	lɪəf
	wɔʃ		sɪləp

	waɪt		fəɪg
	fɪl	tʃər	bəlu:
	dʒɪərəʊ	ən	
	sa:lt	trɪn	
	mæt		
	a:l		
	a:rm		
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
dit	la:mb	læd	dəlæk
Dæd	luk	fæt	
Bæb	ba:s	mɒt	
dit	zɪb	sɪm	
	fɪər	mɪs	
	mɒm	təɪ	
	di:	fatər	
	dæt	Mæts	
	dɔ:l	bæt	
	dest	sæd	

### Written English tests

TABLE 4.4 (a)

Analysis (written test)			
Metathesis	Substitution	Omission	Addition
Pit	pet	rid	sekol
Grel	dit	back	
Fil	lamp	mats	
Mas	bit	bats	
Mit	qag	ver	
Mis	dad	wat	
Tib	longer	mo	
	cote	dei	
	pag	van	
	soft	am	

	jip		
	su		
	chare		
	weet		
	bed		
	ban		

Reading test Hindi

TABLE 4.4 (b)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
bha:l	zi:ra:	bədər	əbha:y
Sa:t	nədʒər	ka:ta:	da:va:
Mɪli	medʒ	khətər	ra:sa:
	a:sa:.	təra:	pa:gə:la:
	pe:d	daka:	meg
	orət	o:l	ra:vi
	ra:nɪ	kan	ro:ka
	mɪʈɪ		
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
Sa:f	ka:səl	dhənda	əbha:ya:
	ma:ki:		
	sa:k		
	səməs		
	fa:n		
	na:f		
	fa:n		
	sədəf		

Writing test Hindi

TABLE 4.4 (b)

Analysis (phonetic errors)			
Metathesis	Substitution	Omission	Addition
sa:p	ra:sa:	bəðər	da:va:
	gər	ka:ta:	ha:ra:
	zi:ra:	dhənda	ʈəpəka:
	ke:la:	khət	ka:ta:
	ənək	daka:	ra:vi
	orət	o:l	ma:dhu
	chtari:	kan	cha:ra
		meg	la:ri:
		sa:	ki:tab
Analysis (orthographic errors)			
Metathesis	Substitution	Omission	Addition
ma:l	pəvən	pu:ch	əbha:ya:
	səvəl		i:mli:
	raghab		
	kachal		
	chəha:		
	mu:k		
	ki:tab		
	majis		
	lalala		
	surach		

TABLE 4.5 (a)  
English reading test

Analysis (Phonetic errors)			
Metathesis	Substitution	Omission	Addition
grə:l	ləmb	kɪn	bəlæk
	lə:si:	fi:r	sətɒp
	ʃu	mæts	səlɪp
	ti:fr	meldɪ	fərcɒg
	wɒt	ten	
	bɒt	bæt	
	ɪt	wɪt	
	kæt	hɪs	
	sɒp	tʃa:(r)	
	səpən		
	rʌs		
Analysis(orthographic errors)			
Metathesis	Substitution	Omission	Addition
tɪb	bæt	hɒt	
tɪm	ləmb	kɒt	
tɪp	dɪmb	wɒt	
Bæq	pæg	bɒt	
dɪt	bʌv	kɒt	
Næp	bæ:s		
dɔ:l	wɪ:t		
dɪt	ovən		
Tim	dɔ:l		

	dit		
	oul		
	sænb		
	bram		

TABLE 4.5 (a) Written test English

Analysis (phonetic errors)			
metathesis	Substitution	omission	Addition
map	red	gil	
tip	dav	sin	
nip	skul	pas	
	leef	chare	
	saft	lef	
	dis	fel	
	Mat	rof	
	wit	met	
	shu	sa	
	solt	sow	
	fier	bet	
	ziro	sad	
	wat	gras	
	aven	rin	
	on	ten	
	cot		
	alon		
	aol		
	spun		
	wen		
orthographic analysis			
Metathesis	substitution	omission	Addition
Dat	baq		

Dit	dad		
Cat	dag		
Det	lazi		
Ban	baj		
Belu	blay		
Was	dal		
	dit		
	doy		

TABLE 4.5 (b) Reading test Hindi

Phonological Analysis			
Metathesis	Substitution	Omission	Addition
	pəbən	ma:f	seb
	pha:səl	bəda:	səməya:
	səvəl	bhə:lu:	da:va:
	vərəm	əbhyə	ha:thi:
	lora:	mə:ta:	ha:ra:
	zi:ra:	ta:r	təpəka:
	mi:ṭhi:	chətər	gə:la:
	çha:tra:	rəsi:	pə:ga:l
	a:sa:	məsla:	səməja:
	dhənda:	pət	ra:vi
	te:ra:	meg	
	ke:la:	ga:l	
	na:k	chəp	

	daku:	arət	
	a:lu:		
	ro:ka:		
	kan		
	sa:		
Orthographic Analysis			
<b>Metathesis /Reversal</b>	<b>Substitution</b>	<i>Omission</i>	<b>Addition</b>
	sa:p	<i>vən</i>	pa:ni:
	la:m	la:l	
	mu:k		
	bən		
	joɾa:		
	bəʈka:n		
	ma:nub		
	sa:t		
	pe:d		

TABLE 4.5 (b)  
Written test Hindi

Analysis (phonological errors)			
Metathesis	Substitution	Omission	Addition
Va:n	paban	ma:f	fa:sal
Sa:p	fal	ta:r	Seb
ʃa:t	safal		ʈapaka:
	bada:		ka:dʒa:l
	varam		gala:
	da:va:		a:leg

	chatar		
	la:ra:		
	rasi:		
	zi:ra:		
	la:l		
	Pu:çh		
	dhanda:		
	sa:dʒh		
	Kha:tra:		
	meg		
	Ra:vi		
	i:t		
	ma:dhu		
	U: t		
	pe:d		
	Ke:la:		
	na:k		
	daku:		
	a:lu:		
	ro:ka:		
	a:ret		
	kan		
	sa:		
	sa:		
Analysis (orthographic)			
Metathesis	Substitution	Omission	addition
	sa:p		
	sevel		
	la:m		
	jora:		
	sedek		
	se:r		

	a:sa:		
	sa:t		
	mu:k		

*Chapter 5*

***CONCLUSION***

Dyslexia is a mystery as no one can exactly or adequately describe it. No one seems to know what dyslexia is or what causes it. However, much is known about the 'dyslexic condition', therefore as a consequence, dyslexia tends to be described in terms of its symptoms or in terms of what it is not. For example, 'Dyslexia is not a disease, therefore it has no cure.' Or 'Dyslexia is not a result of low intelligence.'

Many writers and linguists have put forward their own views and theories, quite different from each other. The result is utter confusion for anyone who is new to this field or has no in depth knowledge about it. Although no two dyslexics are the same, all dyslexics share enough common symptoms to make recognizing the condition possible.

The **British Dyslexic Association** defines dyslexia as 'an intelligent, bright or even gifted individuals, that for no obvious reason, struggle to learn through the medium of written or spoken language.' On the other hand the **World Federation of Neurology** defines dyslexia as a 'disorder manifested by differences in learning to read, despite conventional instruction, adequate intelligence and socio-cultural opportunity.'

Dyslexia is not just a severe reading disorder characterized by reversals. It is a syndrome of many and varied symptoms that affects millions of children and adults. Dyslexia can also be the ability to see words multidimensionally, all at once, or from any one place at a time. The ability to think in pictures and to register those pictures as real. Thus, creative thinking is mixed with reality and what is seen and heard is changed with what is imagined. To be able to read and spell requires co-ordination of many brain functions. Problems arise at one or more functional levels, with co-ordination either being incomplete or delayed.

A neurobiologically-based deficit in acquiring reading and spelling skills, dyslexia, is related to a person's general intellectual abilities. It is a discrepancy between a high score on intelligence tests and low scores on reading/spelling tests. This disability alters the way the brain processes written material. It is a learning difficulty characterized by problems with written or spoken language such as reading, writing, spelling, speaking, or listening.

This is a vast area of research. But due to paucity of time and the fact that this is a M.Phil dissertation, I could not consider many areas, which are otherwise important. My work in this field has been restricted to formatting linguistic profile of dyslexic children, on the basis of tests conducted. The diagnostic tests for dyslexia currently in use are generally in English language. There was no test in the Indian language and the Indian bilingual. Therefore, it was not possible to find out what kind of errors would be shown in reading and spelling Hindi which contrary to English is a syllabic language. Would they make similar errors. What kind of errors were more in frequency. For this purpose, the tests, which were currently in use in the various speech clinics considering the age group of the children, were selected.

Once the test was prepared, it was then administered to two different groups of children. One group is referred to as the control group. The other is the case study group. The control group was needed to validate the tests prepared. The tests revealed that there were certain words, which were not suited for the children of this age group. The control group children made errors in reading and writing these words. This meant that it was not possible for the dyslexic children to be able to identify and write these words clearly. Errors in these words would not then be taken as an indication of dyslexia. These words are stated below.

TABLE 5.1

List of word that failed the control test and will not be analyzed.

English	Hindi
appear	phəl
bubble	səphəl
hotel	thoɾa:
tick	səɾək
return	ʃəɾkon
scat	bha:ʃn
finger	ma:nuʃ
dove	pəɾdʒhəɾ
machine	sā:ɟh
thumb	ī:t
usual	pe:r
rouge	dəkət
huge	ɬhəhəɾ
mow	kāta:
whale	mez
everywhere	ma:kkha:n
bait	
all	
arm	
alone	
thin	
when	
bread	
clean	
luck	
teacher	
page	
watch	
swim	

mitt	
climb	

On noticing carefully whatever words they could not read, they could not write as well. These words include clusters in the beginning of the word e.g. when; or clusters at the end of the word e.g. ring, tick, luck. There are certain words that he could read correctly but could not spell correctly e.g. clean, bubble etc. This may be due to the reason that these words have been introduced to the child via sight vocabulary and he does not know sound-letter correlation of these words.

Words like usual, rouge are not at all meant for the children of this age group but were included to complete the test. The words like everywhere, thumb, finger are understood by the child, though he is not familiar with the word structure or the sound structure. Other words like whale, machine, hotel, return are familiar to the children semantically and they read and spell them incorrectly because of the peculiarities of the English language.

In Hindi the errors are more due to a confusion between similar looking letters. Only /i:t/ is the word where a vowel is being changed. All the other cases are of consonant substitution-orthographic substitutions. All the errors in reading are also done in writing. Errors other than the ones in the tables above will be taken as indicators of dyslexia

The control test proved that these words were not an indicator of dyslexia, therefore these errors are not being considered while making analysis. We will only be concentrating on the errors that are left after the one, which control test have been taken out. In the light of the above statement, we will now discuss each case individually and see what kinds of errors are predominantly made. With each case in front of us we will then be able to make generalizations of any kind.

## CASE 1

Referring to the analysis of the tests in English and Hindi for Case study 1, in chapter 4, following are the conclusions drawn:

### English tests

- ◆ There is only one example of Metathesis in reading: /sɔɪl/ was read as /sɔɪl/. there is interchange in the position of the vowel.
- ◆ In writing **Metathesis** are of three kinds, one, interchanging of the positions of the letters within a word e.g. the position of /r/ in the word /gə:rl/- /grə:l/; two, interchanging of consonants e.g. /b/ and /d/ e.g. dæd-bæq, bɪt- dɪt, bɔ:l -dɔ:l etc.; three, reversal of the letters in a word, e.g. pit-tip; pin-nip; was-saw;
- ◆ All the substitution errors are due to the child's phonetic sequencing e.g. / əʊn/ is read as /ɒn/ which is not wrong according to him. When he sees a word /own/ he substitutes /on/ for it, because he is not able to read the /w/ in between the /o/ and /n/. A similar explanation hold true for / ɔ:l-a:l/ and / aul-oul/. For the word /kli:n/ he has substituted the long vowel /i:/ with short vowel /ɪ/.
- ◆ In reading and writing we can find two types of **Substitution** errors are as above of the two types :  
The **phonetic substitution** can of  
Vowels e.g. læmb-læmb or fu:- fʊ or i:t-it or spʊ:n-səpən or kæt-kæt; raid-red; spoon-spun; chair-chare  
Consonant e.g. ti:tʃər-ti:ʃr; læ:zi:-lə:is or ʃɔp-sɔp or rʌʃ-rʌs

**Orthographic substitutions** are generally on the basis of similar looking consonants

/p/ and /b/; e.g. læmp-læmb; play-blai;

/b/ and /d/; e.g. dʌv-bʌv; bag-dag

/w/ and /m/ e.g. mi:t-wi:t

- ◆ With respect to writing, **Omissions**, may be of the following kinds

Ones that can be explained **Phonetically**:

There may be vowel omissions as in these cases e.g. fi:ər-fi:r; melədɪ-meldɪ;  
tʃeə(r)-tʃa:(r); meet -met;

Ones that can be explained orthographically:

There may be consonant omissions in words e.g. ðɪs-hɪs; whɔt-wɔt:. tent-ten; kɪŋ-kɪn; bɔtl-bɔt; baɪt-bɪt; sænd-sæd

- ◆ **Additions** as in table 4.3 (a) are not due to dyslexia but it seems to be a peculiar characteristic of his linguistic background, e.g. blæk-bəlæk

### **Hindi tests**

- ◆ **Metathesis errors** shift in the position of vowel sign e.g (shifting of /a/ from beginning position to the final position /a:g/ and /əga:/ or  
Could be reversal of alphabets e.g. /saf -fas/; /na:v-va:n/. This is true for both reading and writing.
- ◆ **Substitution errors**  
Where there is a substitution of vowel sounds e.g. /ziro- zira/; /çha:tri:-  
çha:tra:/;

Two similar kinds of vowel sound, then he changes one of them, e.g. /ta:ra:-  
te:ra:/; / ke:le:- ke:la:/; / ro:ko:- ro:ka:/

When in the word a letter is dropped and a vowel is changed, e.g / enə:k-  
na:k/; /ole:-a:lu:/

Where similar looking letters are substituted, in both reading and writing, e.g.  
/pəvən-pəbən/; /la:bh- la:m/

When one word is replace by another closely related by sound e.g / a:ša:-  
a:sa:/ (this case might also be at times influenced by one's native linguistic  
background); /megh-meg/

◆ **Omission errors**

When vowels are deleted from the word e.g./ mafi-maf/; /ma:ta:-məta:/

When syllable are deleted from the word e.g./bəndər-bəda:/; / rəssi:- rəsi:/  
/laləch-la:l/

◆ **Addition errors**

Where vowel signs are added e.g. /səb- seb/; /ha:th-hathi:/

## CASE 2

Referring to the analysis in Chapter four the following are the conclusion drawn:

◆ **Metathesis errors** were either due to

Reversal of the letters in the word i.e the last letter would become the first, e.g.  
/ wɔs- sɔw/; /pin-nip/

Even reversals of the letters in the word, e.g./ækt- kæt/

In Hindi too, the metathesis is generally of the same types as in English

## Reversal of letters in a word /ra:t-ta:r/

- ◆ In English,

- Substitution

- Vowels e.g. /læmb-læmb/ or /leaf-leef/; /i:t-ɪt/; /kʊ:t-kʌt/; /raid-rid/;  
/chair-chare/

**Orthographic substitutions** are generally on the basis of similar looking consonants

/p/ and /b/; e.g. /læmp-læmb/; /play-blai/; /pit-bit/;

/b/ and /d/; e.g. /dʌv-bʌv/; /bag-dag/; /bet-det/

/w/ and /m/ e.g. /mi:t-wi:t/

/s/ and /ʃ/ e.g., /lə:zi:-lə:si/; /ʃɒp-sɒp/

- ◆ Omissions

- There may be vowel omissions e.g. /fæst-fæt/; /meet-met/; /feet-fet/

- Ones that can be explained orthographically:

- There may be consonant omissions in words e.g. /ðɪs-hɪs/; /whɒt-wɒt/.

- /tent-ten/; /bɒtl-bɒt/; /ring-rin/; /sænd-sæd/; /lamp-lam/

- ◆ Addition

- His addition were also probably influenced by is linguistic background.

## Hindi tests

- ◆ Metathesis: Saptrishi did not have any entry in this column.

◆ Substitution :

Where there is a substitution of vowel sounds e.g. /dəva:- da:va:/; /çha:tur:- çha:tər/; /ke:le:- ka:la:/;

Two similar kinds of vowel sound, then he changes one of them, e.g. /ta:ra:- te:ra:/; /ro:ko:- ro:ka:/

When in the word a letter is dropped or a vowel is changed, e.g. /ənə:k-na:k/; /ole:-a:lu:/

Where similar looking letters are substituted, in both reading and writing, e.g. /pəvən-pəbən/; /la:bh- la:m/; /səbəl-səvəl/

When one word is replace by another closely related by sound e.g. / a:ša:- a:sa:/ (this case might also be at times influenced by one's native linguistic background); /peṛ-ped/; /gher-ger/

◆ Omission errors are

When vowels are deleted from the word e.g./ na:k-nək/; /ta:ra:-ta:r/; ./bəndər-bədar/; /kāta:-kata/.

When syllable are deleted from the word e.g/ rəssi:- rəsi:/ /laləch-la:l/

◆ Addition errors

Where vowel signs are added e.g. /səb- seb/; /ha:th-hathi:/

### CASE 3

Referring to the analysis of the tests in English and Hindi for Case study 3, on page of chapter four, following conclusions are drawn:

#### English tests

- ◆ **Metathesis** included reversal of the letters in a word e.g. / pit- tip/; / sɔ- wɔs/

It also consisted of words in which the letters had been changed with similar looking letters, e.g / tip- bit/;/ pit- bit/

- ◆ In writing **Metathesis** of three kinds are found, one, interchanging of the positions of the letters within a word e.g. the pre-consonantal /r/ in the word /gə:rl/- /grə:l/; two, interchanging of consonants e.g /b/ and /d/ e.g., /bit- dɪt/, etc.; three, reversal of the letters in a word, e.g. pit-tip; pin-nip; /lif-fil/; or in fourth scenario the interchanging of consonant plus the reversal of letters, e.g. /saw-mas/

- ◆ In reading we can find two types of **Substitution** errors are as above of the two types :

The **phonetic substitution** can of

Vowels e.g. læmb-lɑ:mb or /sɔlt-so:lt/; /ɔ:l-a:l/; /sɔft-səʊft/; /ʌven-oven/;

Consonant e.g. /bɔ:l - dɔ:l/; /lə:zi:- leɪdʒɪ/; /ʃɔp-sɔp/

**In writing we come across Orthographic substitutions** are generally on the basis of similar looking consonants spoon-spun; chair-chare

/p/ and /b/; e.g /bag-pag/; play-blav;

/b/ and /d/; e.g dʌv-bʌv; bag-dag

/w/ and /m/ e.g. /mi:t-wi:t/; /meet-weet/

Some even on the basis of sounding very close to each other, e.g /zip-jip/; /ʃu:- su/;

- ◆ With respect to reading as well writing, **Omissions**, may be of the following kinds

Ones that can be explained **Phonetically**:

(vowel omissions)e.g., / fi:ər-fi:r/; /melədɪ-meldɪ/; /tʃeə(r)-tʃər/; /meet - met/;

Ones that can be explained orthographically:

There may be consonant omissions in words e.g. /ðɪs-hɪs/; /wɒt-wɒt:. tent-ten/; /kɪŋ-kɪn; bɒtɪ-bɒt/; /bɑ:t-bɪt/; /sænd-sæd/; /gə:rl/- /grə:l/

- ◆ **Additions** as in table 4.3 (a) are not due to dyslexia but it seems to be a peculiar characteristic of his linguistic background, e.g. /blæk-bəlæk/

### Hindi tests

- ◆ Metathesis errors shift in the position of vowel sign e.g (shifting of /a/ from beginning position to the final position /a:g/ and /əga:/ or Could be reversal of alphabets e.g. /saf -fas/; /na:v-va:n/. This is true for both reading and writing.

- ◆ Substitution errors are

Where there is a substitution of vowel sounds e.g. /ziro- zira/; /çha:tri:-çha:tra:/;

Two similar kinds of vowel sound, then he changes one of them, e.g. /ta:ra:-te:ra:/; / ke:le:- ke:la:/; / ro:ko:- ro:ka:/

When in the word a letter is dropped and a vowel is changed, e.g / ɛnə:k-  
na:k/; /ole:-a:lu:/

Where similar looking letters are substituted, in both reading and writing, e.g.  
/pəvən-pəbən/; /la:bh- la:m/

When one word is replaced by another closely related by sound e.g / a:ša:-  
a:sa:/ (this case might also be at times influenced by one's native linguistic  
background); /megh-meg/

◆ Omission errors are

When vowels are deleted from the word e.g./ mafi-maf/; /ma:ta:-məta:/

When syllable are deleted from the word e.g./bəndər-bəda:/; / rəssi:- rəsi:/  
/laləch-la:l/

◆ Addition errors

Where vowel signs are added e.g. /səb- seb/; /ha:th-hathi:/

#### CASE 4

Referring to the analysis in Chapter four, the following are the conclusion drawn:

◆ Metathesis were either due to

Reversal of the letters in the word i.e the last letter would become the first, e.g  
/ wɔs- sɔw/; /pin-nip/

Even reversals of the letters in the word, e.g./ækt- kæt/

In Hindi too, the metathesis is generally of the same types as in English

Reversal of letters in a word /ra:t-ta:r/

◆ In English,

Substitution

Vowels e.g. /læmb-læmb/ or /leaf-leef/; /i:t-it/; /kʊ:t-kʌt/; /raid-rid/;  
/chair-chare/

**Orthographic substitutions** are generally on the basis of similar looking consonants

/p/ and /b/; e.g. /læmp-læmb/; /play-blai/; /pit-bit/;

/b/ and /d/; e.g. /dʌv-bʌv/; /bag-dag/; /bet-det/

/w/ and /m/ e.g. /mi:t-wi:t/

/s/ and /ʃ/ e.g., /lə:zi:-lə:si/; /ʃɒp-sɒp/

◆ Omissions

There may be vowel omissions e.g. /fæst-fæt/; /meet-met/; /feet-fet/

Ones that can be explained orthographically:

There may be consonant omissions in words e.g. /ðis-his/; /whɔt-wɔt/;.

/tent-ten/; /bɔtl-bɔt/; /ring-rin/; /sænd-sæd/; /lamp-lam/

◆ Addition

His addition were also probably influenced by is linguistic background.

**Hindi tests**

◆ Metathesis: /la:bh-bha:l/; /imli:- mɪli/

◆ Substitution :

Where there is a substitution of vowel sounds e.g. /dəva:- da:va:/; /çha:tur:- çha:tər/; / ke:le:- ka:la:/;

Two similar kinds of vowel sound, then he changes one of them, e.g. /ta:ra:- te:ra:/; / ro:ko:- ro:ka:/

When in the word a letter is dropped or a vowel is changed, e.g. / ənək- nək/; /ole:-a:lu:/

Where similar looking letters are substituted, in both reading and writing, e.g. /pəvən-pəbən/; /la:bh- la:m/; /səbəl-səvəl/

When one word is replace by another closely related by sound e.g. / a:ša:- a:sa:/ (this case might also be at times influenced by one's native linguistic background); /peɾ-ped/; /gher-ger/

◆ Omission errors are

When vowels are deleted from the word e.g./ nə:k-nək/; /ta:ra:-ta:r/; ./bændər-bədar/; /kāta:-kata/.

When syllable are deleted from the word e.g/ rəssi:- rəsi:/ /laləch-la:l/

◆ Addition errors

Where vowel signs are added e.g. /səb- seb/; /ha:th-hathi:/

## CASE 5

### English tests

- ◆ There is only one example of Metathesis in reading: /sɔɪl/was read as /sɔɪl/. there is interchange in the position of the vowel.

- ◆ In writing **Metathesis** are of three kinds, one, interchanging of the positions of the letters within a word e.g. the position of /r/ in the word /gə:rl/- /grə:l/; two, interchanging of consonants e.g. /b/ and /d/ e.g. dæd-bæq, bɪt- dɪt, bɔ:l -dɔ:l etc.; three, reversal of the letters in a word, e.g. pit-tip; pin-nip; was-saw;

- ◆ In reading and writing we can find two types of **Substitution** errors are as above of the two types :

The **phonetic substitution** can of

Vowels e.g. læmb-læmb or ʃu:- ʃu or i:t-it or spʊ:n-səpən or kæt-kæt; raid-red; spoon-spun; chair-chare

Consonant e.g. ti:ʃər-ti:ʃr; læ:zi:-lə:is or ʃɔp-sɔp or rʌʃ-rʌs

**Orthographic substitutions** are generally on the basis of similar looking consonants

/p/ and /b/; e.g. læmp-læmb; play-blai;

/b/ and /d/; e.g. dʌv-bʌv; bag-dag

/w/ and /m/ e.g. mi:t-wi:t

- ◆ With respect to writing, **Omissions**, may be of the following kinds

Ones that can be explained **Phonetically**:

There may be vowel omissions as in these cases e.g. fi:ər-fi:r; melədɪ-meldɪ;

tʃeə(r)-tʃa:(r); meet -met;

Ones that can be explained orthographically:

There may be consonant omissions in words e.g. *ðis-his; whɔt-wɔt; tent-ten; kɪŋ-kɪn; bɔtl-bɔt; bart-bit; sænd-sæd*

- ◆ **Additions** as in table 4.3 (a) are not due to dyslexia but it seems to be a peculiar characteristic of his linguistic background, e.g. *blæk-bələk*

### **Hindi tests**

- ◆ **Metathesis errors** shift in the position of vowel sign e.g (shifting of /a/ from beginning position to the final position /a:g/ and /əga:/ or  
Could be reversal of alphabets e.g. /saf -fas/; /na:v-va:n/. This is true for both reading and writing.

- ◆ **Substitution errors**

Where there is a substitution of vowel sounds e.g. /ziro- zira/; /çha:tri:-çha:tra:/;

Two similar kinds of vowel sound, then he changes one of them, e.g. /ta:ra:-te:ra:/; / ke:le:- ke:la:/; / ro:ko:- ro:ka:/

When in the word a letter is dropped and a vowel is changed, e.g / enə:k-na:k/; /ole:-a:lu:/

Where similar looking letters are substituted, in both reading and writing, e.g. /pəvən-pəbən/; /la:bh- la:m/

When one word is replace by another closely related by sound e.g / a:ša:-a:sa:/ (this case might also be at times influenced by one's native linguistic background); /megh-meg/

- ◆ **Omission errors**

When vowels are deleted from the word e.g. / mafi-maf/; /ma:ta:-məta:/

When syllable are deleted from the word e.g. /bəndər-bəda:/; / rəssi:- rəsi:/

/laləch-la:l/

◆ Addition errors

Where vowel signs are added e.g. /səb- seb/; /ha:th-hathi:/

For making more accurate generalized statement about the language processing in dyslexic children, I feel that the data should also have included analyzing words in context i.e at the phrase or the sentence level. In my further research, I would like work on this area with the same cases and study them in more detail over a period of time.

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