A DIAGNOSTIC STUDY OF KENYAN CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY: DYSLEXIA

BY

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been submitted for examination with my (our) approval as University Supervisor (s).

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ABSTRACT

Reading must be regarded as a skill which by no means every child of normal intelligence can easily master, no matter how well and patiently taught. This research is concerned, not with backward readers generally, but only with a minority of them as may be called dyslexic, that is, those with specific language/reading difficulties which can be ascribed neither to overall lack of intelligence or educational opportunity nor to emotional or social difficulties at home or at school.

In recent years extensive research has been done on the topic of dyslexia in America and Britain and books have been written in an effort to establish the presence, severity, nature and cause of the learning difficulty. There is reason to believe that certain Kenyan children also tend to exhibit those behavioural symptoms ascribed to dyslexia.

Major problems which dyslexic children encounter in reading, writing and spelling include difficulties in visual perception, auditory perception, memory, sequence, orientation and kinesthetic-motor response.

The intention of this study was (1) to identify the specific language/reading difficulties exhibited by Kenyan children, paying particular attention to the above problems, and (2) to find out to what extent this difficulty exists.

Tne sample was composed of children from the eight Nairobi City Council 'High Cost' Primary Schools. These schools are considered as 'High Priority' in educational advantage and opportunity by both parents and educationists. The children were selected as far as possible to exclude those factors commonly associated with and thought to give rise to a difficulty in learning to read and spell. In this sample, socio-economic status, based on the father's or mother's occupation, was largely biased toward a middle class background. In a majority of cases, both parents were educated. This was an advantage in so far as cultural and linguistic deprivation was unlikely to be a major cause of any deficit.

The research was carried out in three stages. In the first stage-Initial Classroom Screening- teachers were asked to refer any child who seemed to exhibit a significant number of the behavioural symptoms which characterise dyslexia by completing

the 'Check List for Detecting Specific Language/ Reading Difficulties', an instrument devised to aid the teacher in assessing her children's reading and spelling difficulties. The questionnaire consisted of 12 behavioural items commonly attributed to dyslexia, on a four point scale. It was assumed that most of the children with dyslexic tendencies would be referred by teachers and prevalence could be based on this assumption. A total of 151 children were initially referred.

In the second screening stage-Diagnostic Testing- both intelligence tests and attainment tests were administered to the referred children in order to ascertain the existence or non-existence of a discrepancy between intelligence level and performance in reading and spelling, one of the criteria selected for recognizing dyslexia. At this stage children who did not meet the criteria in the study were excluded, the criteria including: age, school factors of attendance and change of school, intelligence, retardation, and physical and emotional status. In all, 116 children were excluded.

In the final stage-Identifying Dyslexic Tendencies- the 35 children still in the study were administered the 'Screening Test for Identifying Children With Specific Language/Reading Disability'. This instrument was devised to pin point the specific difficulties exhibited by dyslexic children. From the results one could examine dyslexic tendencies and analyse the extent of the disability.

The results of this investigation support tne presence of dyslexia in Kenyan children. There was evidence to suggest that a sequencing disability may underlie the reading and spelling retardation. The results of this study were too inconclusive to establish a reliable estimate of prevalence. This study supports the notion that different types of dyslexia rarely appear in isolation. Rather, one type of dyslexia is usually accompanied by otner types. Both the severely and moderately dyslexic children exhibited similar behavioural symptoms, suggesting that their disorders are of a similar nature. Results support the presence of a continuum of degrees of dyslexia. The importance of identifying differing patterns of dyslexia for the purpose of planning suitable remedial help, was demonstrated.

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CHAPTER 1

INTRODUCTION: THE NATURE AND PURPOSE OF THE INVESTIGATION

1.1 THE PROBLEM

Teachers have observed an unusual dilemma in the classroom for many years. Certain intelligent children never learn to read, write or spell at the expected age level, no matter what methods of instruction are used. Because they lack satisfactory explanations or solutions, many teachers assign these children to the next higher class, hoping they will someday outgrow their language limitations.

Educators have also known for many years that millions of school children fail to reach the proficiency of their age level in reading, writing and spelling. The percentages of failure fluctuate according to the degree of teacher enthusiasm, methodology used and various other factors in the teaching-learning process. A unique failure group persists, however, within the school population. Regardless of the materials or methods used or the amount of

teacher stimulus, these children remain frustrated when attempting to master language symbols. These children are identified as dyslexic or word-blind. It appears that ten to fifteen percent of the school age population experiences this strange inability to handle language symbols, in spite of good mental ability, comfortable socio-economic status or instructional efforts in the classroom (Templeton, 1969).[1]

What happens to a child who is dyslexic, or rather what fails to happen? It is as though the facilities through which other children learn the various aspects of language are not functioning smoothly. In the dyslexic child there is nothing wrong with his eyesight or his hearing, but the information obtained through these senses is not 'processed' automatically and efficiently. He does not easily associate the look of a symbol with the sound it represents nor with the 'feel' of it being written. Conversely,

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[1]See Historical Review, p. 30 for more views on incidence of dyslexia.

he cannot judge which symbol represents a sound nor which group of symbols make up a word.

Reading and writing are two quite separate skills which in the average child develop more or less together, but in the child with specific language/reading disability, who may have difficulty in any or all of the processes involved in encoding and decoding language, these skills may develop quite separately. It is not uncommon to find a child who has overcome his problem in reading, but who still has enormous problems with spelling.

Major problems which dyslexic children encounter in reading, writing and spelling include difficulties in visual perception, auditory perception, memory, sequence, orientation and kinesthetic motor response (Jordan, 1972; Arkell, 1974). In the following paragraph some of the common symptoms which characterise the dyslexic child are discussed. As is true in all cases of disability, no two children will exhibit the same sets of symptoms. In the same way,

no two children will be handicapped to the same degree. Jordan stresses that dyslexia is seen as a continuum, ranging from mild forms of symbol confusion to complex syndromes of disabilities.

The dyslexic child with poor visual perception is slow in taking in a whole word in such a way that he will recognise it when he sees it again, and in recalling the look of it when he wants to write it. He may struggle to read a word on one line, and on seeing the same word on the next line, will approach it as though he has never seen it before. If a child's attention is deflected from the book he is reading, when he wants to continue he cannot find the place where he left off.

The child who is weak auditorily may have been slow in learning to speak. He will often continue to mispronounce words because he is not acutely aware of the exact sounds within them. Likely he will have poor discrimination and get confused between sounds that are similar such as the 'd' and the 't' sound or 'm' and 'n'. Vowels nearly

always cause difficulties. When speaking he may put the emphasis on the worng syllables or get the wrong number of syllables in a word. He may say 'unimous' or 'unaminimous' instead of 'unanimous'. He may be bad at blending sounds when reading. Perhaps he will get the sound sequence wrong within a word, saying 'hostipal' for 'hospital'. It is not unusual for this child to use a word in the wrong context or substitute it for a word which sounds similar. When expressing himself, he may have poor auditory recall and cannot remember what the word he wants to say sounds like.

Sequencing in any form may be difficult for the dyslexic child. He may know the letters of the alphabet, but have difficulty in memorizing the correct order. Learning the order of the days of the week and the months of the year may be equally hard, or it may be the letters within a word. A child may change the sequence of words in a sentence. You may give some instructions to the child - "Go indoors, take off your boots, then go upstairs and wash your hands."

The child will remember the main points, but by getting them in the wrong order he may be found washing his boots upstairs, and his parents may think he is deliberately awkward and naughty.

The child who finds it difficult to remember right from left may also get confused over the terms up and down. He might write 'd' instead of 'g'. Learning directions is particularly difficult. The child who does not easily understand spatial relationships will probably be slow in learning to tell the time. He is under a severe handicap because associations do not come readily. At the time when the class is ready to move on to other topics, the dyslexic child may still be struggling to remember which way round the hands go.

A pupil who has difficulties relating to orientation may ask at which end of the book he should begin. Some children do not remember which side of a page to rule the margin; or, if the margin is too broad, on

which side of it they are to write. Many will be unable to write a column of words or figures neatly below one another, and although the first line written on a page is close up to the margin, each successive one may start further from it. Some children who have this syndrome find that they can read equally well with the book upside down as they can with it the right way up.

Many experts find that dyslexic children are clumsy. However, there are other cases where dyslexic children are excellent games players, good at making models or manipulating intricate machinery. Yet the majority find the process of writing difficult. Their letters are ill-formed, at times to the point of being un-recognizable. Letters may be misshapen or two letters may be fused together. The 'p' may have been started at the bottom or the 'n' worked from right to left, so that when the child learns 'joined up' writing the letter will not join onto its neighbour. The slope of the writing may change each time a pupil starts a fresh piece of work and the overall impression is untidy and messy, with words crossed out and

attempted a second or third time. The capitals may be left out or in the wrong place.

The dyslexic child is constantly having to pay attention to a mass of small details as he writes. His concentration is fixed on the action of the pen from word to word, making sure the required shapes are produced. He may go from the first person into the third, from the present to the past, and in the process the plan of his essay is lost. Taking notes when someone is speaking presents a great problem because the process of writing requires so much of his attention that he cannot listen to what is being said at the same time that he is writing what has gone before. He may ask his teacher to repeat dictation sentences four or five times in an effort to perform well.

As well as having difficulties in manipulating letters in reading and writing, the dyslexic child may have similar problems in interpreting other symbols such as figures in mathematics or reading music (Arkell, 1974).

In addition to the symptoms already listed Miles (1974) includes two more main signs of dyslexia to look out for: (i) discrepancy between intellectual level and performance in reading and spelling, and (ii) bizarre spelling.[2]

Miles regards dyslexia as a family of difficulties. Not every dyslexic sign is presented in every case and similar mistakes may occasionally be made by those who are not dyslexic; but, he states, a person can be regarded as 'dyslexic' if a sufficient number of these symptoms occur together.

Children with dyslexia as described above will also be affected emotionally. Any child of normal intelligence will become uneasy and in due course worried when he realizes that he is being left behind by the rest of the class in most subjects. Because these children

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[2]See Historical Review, p. 12 to for other views on symptomatology.

are unable to perform in school at the level their intelligence should enable them to, they react to the frustration they feel and to their sense of failure in a variety of ways. One child may have temper tantrums or nightmares. Another may find that the best policy is never to draw attention to himself in the classroom in the hope of being overlooked; he may sit dreaming, losing his ability to concentrate and his interest in learning. Because they cannot shine in class, some try to draw attention to themselves in other ways and become disruptive in lessons or violent on the playground. Some may become increasingly anxious about school and finally refuse to go altogether.

If dyslexia is to be corrected it must be identified early in a child's school experience. Clinical experience indicates that time is a critical factor in solving perceptual difficulties. Follow-up studies of dyslexic pupils indicate a rather sombre prognosis.[3]

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[3]Unpublished research findings of the Staff of Clinical Services in Reading, Central State University, Edmond, Oklahoma (1968 - 1971).

If dyslexia is diagnosed before the child enters standard three, there is approximately eighty percent chance that the child can overcome his confusion with language symbols. If the condition is not diagnosed until standard five, there is a forty percent chance of correcting the handicap. For dyslexics who reach standard seven before treatment, there is only about five percent chance for sufficient correction to enable the pupil to reach independent age level proficiencies in encoding and decoding (Jordan, 1972).

Jordan continues by stating that it is not only possible, but also feasible for classroom teachers to discover the signs of dyslexia among their pupils. When the symptoms are recognized early enough much can be done within the classroom structure to correct these handicaps in children. It is with these thoughts in mind that I have made an effort in this research to identify and analyse the symptoms of dyslexia among Kenyan children and to find out to what extent this problem exists in Kenya.

1.2 HISTORICAL REVIEW

Among those who accept that terms such as dyslexia and word-blindness are meaningful and relate to a particular minority of backward readers, there is broad agreement that the disorder is specific and constitutionally determined. Beyond such general agreement, however, opinion is divided among psychologists and neurologists as to precise symptomatology and cause of dyslexia. Several explanatory hypotheses relating to aetiology have been advanced, some postulating genetic factors, others neurological damage while others stress 'maturational lag' or undeveloped learning centres in the brain structure. Each hypothesis is supported by the results of investigations previously carried out. In this review an attempt is made to include studies which illustrate the main schools of thought and which provide the theoretical background to this investigation.

Since congenital word-blindness was first described, many alternative terms have been coined. Today commonly used labels include specific dyslexia, developmental dyslexia,

specific developmental dyslexia, congenital dyslexia, word-blindness and congenital word-blindness. The Orton Society in the United States previously used the term 'Specific Language Disability'. Although these terms are sometimes used interchangeably, there is a multiplicity of notions about the characteristics and aetiology of the disorders they describe. The word 'dyslexia' is literally translated 'defective language' but is generally interpreted as 'defective reading'.

1.2.1 Early History

Dyslexia was first recognized by James Hinshelwood, a Glasgow Ophthalmologist who published in The Lancet in 1895 a paper on "Word - Blindness and Visual Memory". This publication prompted Dr. Pringle Morgan, a general practitioner and school doctor, to write a letter to the British Medical Journal saying: "I have seen at one of the schools I attend, a very intelligent boy of 14 who is unable to learn to read," and he continued by saying, "had all the lessons in the class been oral lessons, he would probably be the brightest boy, but as it is,

he is being kept back by what is possibly, shall we call it a congenital word-blindness." This is the first description of what is today called developmental dyslexia (Critchley, 1970).

From 1900 - 1917 Hinshelwood continued writing extensively on the topic, attributing the condition to difficulties in interpreting and understanding written symbolic texts. He proposed that the condition was due to some form of brain damage, but that general intelligence and reasoning abilities of children suffering from the disability were normal or above normal (Newton, 1970).

In the United States Samuel T. Orton (1937), a neurologist, recognized and studied this specific reading disability, from 1962. He observed that many children with reading difficulties had a tendency to reverse and transpose letters in reading and writing, even to the extent of showing complete mirror reversal of words. Moreover, these children were often left-handed or ambidextrous. Orton invented the term 'strephosymbolia' to describe the reading difficulty. He supposed that the perception

of letters and words established a series of patterns or 'engrams' implanted in the brain, and that those in the right hemisphere were mirror images of the normally orientated engrams in the left hemisphere. In the left-handed and the ambidextrous the left hemisphere had failed to establish the dominance, which normally occurred in the right handed, of the left over the right hemisphere. When cerebral dominance is not established, difficulty would be experienced in selecting the correctly oriented memory image or sequence of memory images, resulting in the reversals and transpositions he had observed in children.

Thereafter, disagreement arose as to whether there is any such disorder as specific reading disability. Many educationists supposed that the causes of extreme backwardness in reading were of the same nature as those of milder degrees of backwardness: lack of culture in the home, inadequate school teaching, poor health, emotional adjustment and so on.

However, of recent years there has been a growing tendency to re-affirm the earlier views of physicians and neurologists, that the extreme type of reading disability can be differentiated from the milder cases. The old term 'word-blindness' has been revived.

1.2.2 Current Concepts

At a meeting of the World Federation of Neurologists' Research Group on Dyslexia and World Illiteracy held in Dallas, Texas in April 1968, Specific Developmental Dyslexia was defined as: "A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin."

The distinction between specific developmental dyslexia and other forms of reading backwardness is made clear by Rabinovitch and Ingram (1968). They have classified reading disability, other than that directly due

to environmental factors, into three main categories:

(1) Primary reading retardation, a disturbed pattern of neurological organization in which no brain damage is apparent.

(2) Retardation resulting from clear-cut brain damage.

(3) Secondary retardation due to emotional blocking.

The majority of those using the term specific dyslexia would agree that it corresponds to the first category.

To what should these reading disabilities be attributed? Current concepts of the nature and causes of dyslexia include: neurological dysfunction, cerebral dominance, genetic transmission and maturational lag.

Neurological dysfunction - In some cases of specific reading disability, minor or 'soft' neurological signs have been elicited. According to Naidoo (1972) evidence of neurological dysfunction has emerged from a number of studies of dyslexic children.

Cohn (1961) reported, in a study of 46 dyslexic children aged 7 to 10 years and 130 children with no reading difficulty, significant differences in right/left orientation, knee-jerk reflexes, motor-coordination, the mechanics of speech and EEG patterns. Signs of neurological dysfunction were still present after two years when 29 of the dyslexic children were re-examined. In a study by Silver and Hagin (1964), a battery of psychological and neurological tests was administered on two occasions with an interval of ten to twelve years to 24 dyslexic children. In their first study they identified three groups of specific reading disability:

(1) A developmental group.

(2) An 'organic' group with evidence of structural organic defect.

(3) A very small group showing no perceptual deficits or signs. In the follow-up study 15 of this sample were considered to be adequate readers and they tended to come from the 'developmental' group. The 'organic' group showed less improvement than the others and

lack of clear cerebral dominance tended to persist.

Neurological abnormalities were identified by Kinsbourne and Warrington (1963) in a group of 13 dyslexic children referred on account of an apparently selective reading disability. The children were selected on the basis of a difference of 20 points or more between the Verbal and Performance section of the Wechsler Intelligence Scale for Children (WISC). Among those with the lower Performance results, there was a higher incidence of neurological dysfunction and also of right/left disorientation. Histories suggestive of birth injury were more common in this group.

Kawe and Pasmanick (1959) postulate that some of the reading disorders in children may follow perinatal minimal cerebral injury. Some writers have found in the brain injured impairment mainly in the visual perception of form, and in motor functions; therefore hyperkinesis, impulsiveness (Clement and Peters, 1962) and general clumsiness of movement (Kucera, 1963). Other writers

consider that brain injury is rare, or that it may be merely a contributory factor (Thompson, 1966).

Cerebral Dominance

An increasingly popular aspect of the dyslexic phenomenon lies in the area of cerebral dominance. The term 'Cerebral dominance' owes its origin to the discovery that loss of speech almost always results from a lesion of the left hemisphere of the brain and that both right-handedness and the lateralization of speech are due to an innate functional pre-eminence of the left hemisphere (Newton 1970).

The atypical patterns of neurological organization and development proposed by Orton have already been referred to. However, evidence relating to the incidence of the left-handedness or indeterminate handedness in retarded readers is conflicting. Many studies have revealed no differences in the proportion of atypical patterns of laterality between unselected retarded readers and control groups (Gates and Bond, 1936; Witty and Kopel, 1936; Smith, 1950;

Belmont and Birch, 1965). On the other hand, where high frequencies had been reported, the subjects were mostly children referred to hospitals for neurological investigation and in this sense 'selected' (Ingram and Reid, 1956; Zangwill, 1960). Affected children have been more commonly ill-lateralized than strongly left-handed as Sheares (1968) also found.

Naidoo (1961), in a study of 5-year-old children selected solely on the basis of hand preference, found that 20 ill-lateralized children, matched for age, sex and school with 20 strongly left-handed and 20 strong right-handed children, were significantly inferior with regard to verbal intelligence. Histories of slow speech development were more frequent among the ill-lateralized children. She reports that Zangwill was impressed by the frequency with which retarded speech development, defects of spatial perception, clumsiness and related indications of defective maturation occurred in ill-lateralized dyslexic children.

Reading necessitates the ability to code meaningfully an ordered sequence of arbitrary symbols. Newton (1970) postulates that difficulties of mirror imaging and reversals which are an ever recurring feature of dyslexia may be due to the inability of the non-dominant hemisphere to suppress the mirror-image, making consistent pattern recognition impossible. She refers to Bannatyne (1966) who stressed the importance of the economy of neural connections in one dominant hemisphere to enable meaningful sense to be made from written and spoken verbal material; he inferred that difficulties arise if language is subserved by both hemispheres.

Genetic Transmission - Concepts of congenital word-blindness had assumed from the first some form of hereditary transmission. Research reports from a variety of sources have been summarized by Critchley (1970), who asserts that "We owe to genetics the most cogent single argument in support of the conception of a constitutional specific type of dyslexia identifiable among the

miscellany of cases of poor readers". He cites the work of Hallgren in Scandinavia who claimed that, of 276 cases, 88 percent had reading problems in one or more relatives. He also referred to Hermann's study of 12 pairs of uniovular twins in which 100 percent concordance regarding dyslexia was found.

Miles (1974) reports numerous cases of familial incidence of dyslexia, suggesting that the basis is genetical. He also infers that the higher incidence of dyslexia in boys than in girls suggests a partially sex-linked factor.

The emphasis on genetic transmission is reflected in Hermann's (1959) definition of specific dyslexia as "a defective capacity for acquiring, at the normal time, a proficiency in reading and writing corresponding to average performance; the deficiency is dependent upon constitutional factors (heredity), is often accompanied by difficulties with other symbols (numbers, musical notation etc.), it exists in absence

of intellectual defect or of defects of the sense organs which might retard the normal accomplishment of those skills, and in the absence of past or present appreciable inhibitory influences in the internal and external environments."

Maturational Lag - The major cause of dyslexia is considered by many writers to be some form of retarded development, or 'maturational lag' in the development of cortical differentiation (Thompson, 1966; Critchley, 1970; Satz and van Nostrand, 1973; Miles, 1974). It appears to be a constitutional disability which may in some cases be genetical, though about this there has been considerable controversy.

As has already been mentioned, many families may include numerous slow readers and left-handed or ambidextrous members. Vernon (1970) suggests that the greater male incidence of dyslexia may be due not to sex-linked inheritance, but to greater natural immaturity. He refers to Tanner who stresses that at the age of six, boys lag 12 months behind girls in skeletal age.

There is considerable evidence of excessive immaturity in dyslexics. Examples include letter and word reversals and directional confusion, which although common enough in young children, persist in dyslexics after the age at which normal readers have grown out of them. These deficiencies begin to disappear in dyslexics at about 9 to 11 years of age (Harris, 1957). Such children may also gradually grow out of much of their reading disability; but some of Zangwill's cases (1960) were adult or nearly adult.

De Hirsch, with many years of experience at a Paediatric Language Disorder Clinic, noted the relatively immature level in perceptuomotor and language skill shown by children of average or good intelligence who later experienced severe difficulties in learning to read and write. She, with her colleagues (de Hirsch, Jansky and Langford, 1966) administered a variety of tests to children of about six years of age, before they began learning to read, and followed up their progress in learning to read, testing achievement one and two years later.

It was then found that children who failed to learn easily, as distinct from good readers, showed at their initial testing various deficiencies including incapacity for visual and auditory analysis and resythesis; directional confusion and reversals; and poor motor control. They also exhibited an infantile inability to work in a purposeful and organised way, and to plan ahead. Such children at the age of 11 to 15 years were still deficient in visual and auditory analysis. About half of them became fairly adequate readers, but their writing was illegible and their spelling bad. The maturational deficit seemed to be prolonged in its effect, constituting a general personality trait. In contrast were others who were slow starters, beginning to read late, but improving greatly. These showed few of the above characteristics, though they performed poorly on highly integrated abstract tasks of classifying.

Stanley and Hall (1973) designed a study to examine differences in the performance of dyslexic and normal children in the recall of letter arrays which were presented for varying durations. Thirty-three dyslexic and 33 normal children aged between 8 and 12 years were recruited for the study. The results

showed significant differences in the level of performance rather than differences in kind of visual information processing and would support the notion of a developmental lag in visual memory.

Reading, writing and spelling are very complex acts and require competence in the understanding and use of language, in the ability to distinguish one sound from another, and one shape from another. The child has to learn to recognize word patterns and to recall them, accurately reproducing the letters of a word in correct sequence. Associations between sounds and shapes must be formed. Fine control of hand and eye and co-ordination between hand and eye are needed. These skills are still maturing when children start to school. Children differ widely in the rate at which they develop and sometimes there are marked variations in in the rate at which different skills mature. Discrepant levels of function within the individual child may be due to an unusually delayed maturation of a part of the brain (Rutter, Tizzard and Whitmore, 1970).

In summary, it can be stated that the current concepts of dyslexia outlined above need not be mutually exclusive. Genetic factors may underlie the maturational lag and patterns of atypical cerebral dominance. The crucial identifying feature in dyslexia is the presence of a specific learning disability; the major problem exposed as a difficulty in learning to read relative to the learning of other skills. Again, as Rabinovitch (1954), Vernon (1962) and others have pointed out, specific dyslexia may be aggravated by adverse environmental factors and/or emotional problems and just because these are present one should not conclude that there is no constitutional basis for the dyslexia.

Other difficulties associated with dyslexia - Previous studies have identified many other difficulties occurring in association with dyslexia, which vary from child to child.

A disturbance in the understanding of left and right has been found to be common in dyslexic children (Harris, 1957; Rutter, Tizard and Whitmore, 1970). Hermann (1959) stressed that a right/left confusion is one of the primary

factors underlying specific dyslexia and gives rise to errors of rotation and reversal.

Delayed speech development and disorders of speech and language are reported to be common among dyslexic children. A history of late speech development was found by Ingram and Mason (1965) and defective speech by Doehring (1968).

The ability to discriminate between sounds which are similar, for example 'd' and 't', is poor in some retarded readers (Wepman, 1960; Clark, 1970).

The successful blending of sounds is to some extent dependent upon the ability to retain and reproduce a sequence of sounds in correct order. Several investigations have shown that the recall of sentences or of a sequence of orally presented digits presents difficulties (Myklebust and Johnson, 1962; Doehring, 1968).

Retarded readers are frequently reported to perform poorly on tasks requiring the copying of figures, which are essentially visuo-motor tasks (Brenner and Gillman, 1966, Debray, (1968).

Reading and spelling require competence in speech, language, visual and motor skills as well as on associations made between them. In trying to determine why these complex integrative tasks are so difficult for dyslexic children most studies have been concerned with the examination of the more discrete functions involved. That the defect might be rather in the co-ordination of auditory, visual and tactile sensory patterns is suggested by the work of Beery (1967) and Kahn and Birch (1968).

1.2.3 Incidence

There has been considerable disagreement as to the incidence of dyslexia in the general school population, even among those who regard it as a condition distinct from other forms of reading retardation. American authorities such as Templeton (1969) and Meier (1971) report that possibly ten to fifteen percent of the school age population experiences this difficulty. Rabinovitch (1968) more cautiously suggests about three percent. Newton (1974) suggests that as many as 28 percent of children entering school could be at risk in learning to read because of dyslexic-type language difficulties. According

to Vernon (1970) there are no large scale British surveys of the incidence of dyslexia because there has been no general agreement as to the nature of the disability.

1.2.4 Forms of Dyslexia

Research clearly indicates that all children described as dyslexic, whatever the criteria, do not present the same signs and symptoms. It has therefore been suggested that there may be different varieties of dyslexia which can be recognized by different patterns of disability.

Ingram (1964) suggests that three sub-categories can be identified on the basis of the nature of the difficulties presented:

(1) Those with visuo-spatial difficulties,

(2) Those with speech difficulties and

(3) Those with correlating difficulties.

In reading, the first group may fail to recognize letters or groups of letters, tend to guess words from shape rather than from context, confuse reversible letters, transpose letters in syllables, syllables in words and words in phrases.

They may read backwards. In writing there may be difficulty in reproducing letters and groups of letters correctly. Letters are reversed and shapes confused. Transpositions of letter, syllable and word order are also common.

The second group is characterized by difficulties in synthesizing words from component sounds and in understanding words and sentences correctly read. When writing, difficulty may occur in breaking words into syllables, in finding words and in the construction of sentences.

The third group have difficulty in finding the appropriate speech sounds for individual letters or groups of letters and are unable to recall the visual form of sounds in writing.

More recently, Johnson and Myklebust (1967) have described two forms of dyslexia based on differing symptomatology, visual dyslexia and auditory dyslexia. Jordan (1972) discusses three forms of dyslexia, namely: Visual dyslexia,

auditory dyslexia and dysgraphia; the first two forms being very similar to Johnson and Myklebust's descriptions.

The visual dyslexic has difficulties in translating printed language symbols into meaning. Commonly found are difficulties in visual discrimination, particularly in complex patterns, letter reversals and inversions, and problems in perceiving and reproducing visual sequences. Visual retention is poor and the rate of perception is slow. Whole word recognition in reading is faulty and hesitant. Some children are rather clumsy and poor at games.

The auditory dyslexic has difficulties in analysing words into constituent sounds or syllables and in synthesizing sounds and syllables into meaningful whole words. He has difficulty in perceiving common sound units and therefore may fail to identify words which rhyme. There may be some difficulty in auditory discrimination particularly with short vowels and consonant blends. The

reproduction of sounds and words may be defective, with a tendency towards garbled speech. The ability to reproduce a sequence of sounds may be poor both with regard to the span of the sequence and its order. These children may be good at games and handicrafts.

The dysgraphic child finds difficulty in coordinating hand and muscles to write legibly. He may write letters or words backwards, distort symbols, or use backward motions in writing certain symbols. There may be difficulty in copying or tracing simple shapes. He may not be able to recall how to write certain symbols. There may be a tendency to telescope or to perseverate.

Rarely does a child exhibit only one form of dyslexia. Visual dyslexia is often accompanied by auditory dyslexia, which makes it all the more difficult for the disability to be corrected. It is essential that these factors be identified because, as a rule, only one disability can be corrected at a time. An important characteristic of dyslexia is that multiple stimuli tend to cancel each other out. This means that many dyslexic children cannot master written symbols

at the same time they are drilling on phonics. Corrective teaching must provide clearly structured sequences which involve one basic skill at a time. By moving carefully from one skill to another, most dyslexics can overcome many of their limitations within the classroom structure.

1.3 PURPOSE OF THE STUDY

Reading must be regarded as a skill which by no means every child of normal intelligence can easily master, no matter how well and patiently taught. A minority of children find difficulties with reading and spelling out of all proportion to their intellectual competence and in spite of encouragement received from parents and teachers. What can be done about it? This is one of the basic questions to which the researcher addresses herself in this study. The research is concerned, not with backward readers generally, but only with that relatively small proportion of them as may properly be called dyslexic, that is, those with specific reading difficulties which can be ascribed neither to overall lack of intelligence or educational opportunity nor to emotional or social difficulties at home or at school. These are children who, while in no sense physically or mentally abnormal, suffer from a genuine developmental handicap. Their disability is educational rather than medical in the ordinary sense.

In many cases, dyslexia has no outward symptoms and because the sufferer is normal in other things, the problem is often wrongly diagnosed and mis-understood. To add to the child's problems, he may be labelled lazy and careless; he may be accused of not trying. Those who have learned to read and spell with comparative ease find it difficult to understand why something that they have assimilated without conscious effort could be such a mammoth task for others. They do not stop to think about what complex processes are involved in acquiring and using the skills which deal with the decoding of symbols in reading, and with the encoding of spoken language in writing.

In our modern society words are used a great deal. Spoken words are heard constantly. Endless words are written and read and many simple events in everyday life are dependent on the individual being able to read and write. Those who have not acquired the necessary skills to deal with written language will be under a severe handicap; they will miss important information, they are likely to have a grave feeling of inferiority and will probably be looked down upon by their more fortunate fellowmen.

The difficulties of dyslexic children are increased by inadequate provision for diagnosis and teaching. Moreover, unless the child of today, and particularly the intelligent child, can learn reading and writing with some ease he has little chance of receiving an education commensurate with age, ability and aptitude. Handicapped educationally, he is then too often denied the teaching he needs to develop his potential. Conscious of his failure to succeed as the majority of those around him are succeeding, perhaps under pressure from home as well as from school, he is vulnerable to emotional stresses and strains. When he leaves school his choice of a career may be restricted because of the limitations imposed by his handicap.

Although dyslexia is a serious handicap, it need not be a major tragedy. The important thing in the first place is that the handicap should be recognized. If parents and teachers understand just what it is that a dyslexic child finds difficult they can help not only by showing sympathy and giving encouragement but in particular by arranging for suitable teaching.

In recent years, educational psychologists have been writing extensively on how to identify and correct dyslexia, postulating that this disability is educational rather than medical. Miles (1974) points out that from the treatment point of view it is important that the teacher appreciates that the cause of dyslexia is constitutional, since this indicates that such factors as parental problems or poor teaching are not the cause of the condition. However, the precise details are not of major importance for the teacher because dyslexia cannot be 'cured' by rectifying whatever the constitutional fault may be; rather the teacher tries to alleviate the handicap by appropriate teaching. Miles proposes that dyslexia is a medical matter in its origin and an educational matter as regards treatment. Both medical and educational considerations are important for its understanding. In his book The Dyslexic Child, he suggests procedures which can be used to recognize dyslexia. These procedures have been adopted and used in this study in an attempt to detect possible dyslexic type difficulties within a selected sample of Kenyan children.

Jordan (1972) states that the many researchers who suggest that dyslexia is the result of dormant or undeveloped learning centres in the brain structure,

define the problem in terms of the child's classroom behaviour. Regardless of its causes, he suggests that the immediate concern for the teacher is what can be done now, within the context of school limitations, to help dyslexic children become independent literate individuals. Jordan, in his book Dyslexia In the Classroom describes in great detail how dyslexia can be recognized and corrected by the classroom teacher. In addition, he has developed a screening test to identify this specific reading disability.

The Slingerland Screening Tests for Identifying Children with Specific Language Disability are designed to screen from a group of children those with specific language disabilities who are in need of special attention or remediation at the moment. Slingerland (1970) implies that it is important to identify these children as early in school life as possible, so that education can provide step-by-step structured learning patterns to bring about the simultaneous use of auditory, kinesthetic and visual channels required for perceptual intake, integration and output.

Items from both the Jordan and Slingerland Screening Tests have been adopted for this research for the purpose of identifying and analysing the dyslexic tendencies exhibited by Kenyan children.

Margaret Newton (1974) has devised a diagnostic instrument of dyslexic type difficulties the 'Ashton Index' which she hopes to put into the hands of all teachers throughout Britain.[4] The Index is intended as a first screening procedure. It has been devised to give the teachers a means of being alerted to those children who will be 'at - risk' in a verbally-biased educational system because of their pre-disposition to dyslexic - type difficulties.

The use of the Index will:

- Give appropriate awareness to teachers at the critical time.
- Ensure appropriate teaching and learning programmes.
- Minimize the anxiety and guilt in both child and mother.
- Fulfil a long-term objective of satisfactory and effective involvement in the educational system of the country.

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[4]The 'Ashton Index' is currently being validated in British schools, results to be published in the near future.

An original aim of the research was to carry out further diagnostic testing with those children who were identified as dyslexic, using some of the performance items from the 'Ashton Index', This testing was intended to assess and understand the extent of each child's specific reading/language difficulties. Such an assessment could be followed up at a later stage with appropriate remedial treatment.

Unfortunately, time and funds did not allow this diagnosis to materialize. However, the study was able to achieve its purpose in recognizing the dyslexic child and to a limited extent in analysing the specific reading/language problems exhibited by these children. It is hoped that in the near future provision can be made for a more adequate diagnosis so that appropriate teaching and learning programmes can be devised for these children.

1.4 COLLECTION OF DATA

The data analysed in this study were obtained from schools and from tests which were intended: (1) to measure general attainment, intellectual ability and (2) to identify specific language/reading difficulties.

1.4.1 Information from Schools

The 'Check List for Detecting Specific Reading Difficulties' with accompanying Guide and a questionnaire were distributed to teachers within the eight Nairobi City Council 'High Cost' Primary Schools used in this research (see Appendix B).

The initial screening procedure for detecting children with dyslexic tendencies was based on the Check List, an instrument consisting of 12 items on a four-point scale which characterize the behaviour of the dyslexic child. These items were derived from Miles (1974) list of main signs used in recognizing dyslexia. An accompanying Guide providing representative examples of behavioural symptoms for each of the 12 items on the Check List was

included to assist the teacher in assessing the child's reading, spelling and/or writing difficulties.

The purpose of the questionnaire was to assist the researcher in determining the extent to which the referred child was handicapped in school by his reading, spelling and/or writing difficulty and to obtain information about the specificity of the language/reading difficulty. Information from the questionnaire relating to socio-economic status of parents, attendance, extra tuition, performance in school work and behaviour, physical condition, parental interest in progress and behaviour and the teacher's estimate of intelligence was used in this study.

1.4.2 Tests

The choice of specific tests was determined by a number of considerations.

One of the criteria for recognizing dyslexia was to ascertain a discrepancy between intellectual level and performance

in reading and/or spelling. In the absence of Standardized intelligence tests available for Kenyan children an attempt was made to find out something about the child's intelligence level by selecting certain overseas tests which have been used for experimental purposes in other African countries.[5]

The Standard Progressive Matrices by Raven (1958) and the Goodenough - Harris Draw-A-Man Scale (Harris; 1963) were considered the most appropriate tests to be administered in order to obtain a reliable estimate of the child's intellectual capacity. These tests do not penalise the non-reader, rather they allow opportunity for maximum performance. In addition, these tests are untimed, an advantage to children with dyslexic tendencies.[6]

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[5]Refer to chapter 2.3.3 - Rationale for Using Overseas Tests, pg 79.

[6]Refer to chapter 2 - Methodology, for a full description of each of the tests mentioned in this section.

All the eight schools selected for this study used reading and language materials from either America or Britain in their Standard I to III classes. Commonly used reading materials included the 'Janet and John' readers published by James Nisbet and Co., the 'Gay Way Series' by E.R. Boyce, the 'Ladybird Books' and the 'Better English' language series by R. Ridout. Several of the schools administered the Vernon and Schonell Graded Word Reading Tests for yearly assessment purposes with apparent favourable results (according to the teachers concerned). Moreover, in such tests verbal and cultural biases are minimal in comparison to the biases in verbally loaded reading tests. It was therefore considered feasible to include the Schonell Graded Word Reading Test and the Schonell Graded Spelling Test A (Schonell, 1960) for the purpose of obtaining an estimate of the child's performance in reading and spelling.

The primary purpose of this research has been to identify those behavioural symptoms which characterise the dyslexic child.

'The Screening Test for Identifying Specific Language/Reading Disability' was adopted from the Jordan Written Screening Test for Specific Reading Disability and the Slingerland Screening Test for Identifying Children With Specific Language Disability, Forms C and D (Jordan, 1972; Slingerland, 1970), (see Appendix D). This test was not intended to yield a concrete scale or sequence of scores. It was designed only to show the existance of behavioural tendencies which characterise dyslexia.

The tests had to be valid for the age range of the children in this study. Lastly, in order to avoid prolonged testing at any one time these tests were administered in three different sessions as follows: session one - intelligence tests; session two - attainment tests; session three - the screening test (to only a select group of children).

1.5 CRITERIA FOR DETERMINING MINIMAL REQUIREMENTS

The primary purpose of this study was to identify a specific language/reading disability in Kenyan children. The children who were selected for the 'Screening Test for Identifying Specific Language/Reading Disability' all met the following criteria:

(1) Age not less than 9 years and not exceeding 12 years 11 months.

(2) A clear discrepancy between intelligence level and performance in reading and spelling:

i) Performance not less than Grade III (over 25 percentile) in the Standard Progressive Matrices Test and not less than 25 (Percentile Rank) on the Goodenough - Harris Draw -A- Man scale.

ii) Reading Age and/or Spelling Age at least one year below Chronological Age (in Schonell's Graded Word Reading Test and Schonell's Graded Spelling Test A).

(3) School factors:

i) Must have attended a "High Cost" school since January 1974.

ii) No major absence from school, and not more than three changes of school since the beginning of primary education in Standard I.

(4) Physical normality (based on School Report).

(5) No evidence of severe emotional disturbance (based on School Report).

(6) Not less than four items in the 'Check List for Detecting Specific Language/ Reading Difficulties' had to be ticked either ALWAYS or USUALLY for the child to be initially accepted into the study for further screening.

The sample for this study was composed entirely of children from The Nairobi City Council 'High Cost' Schools. Socio-economic status, based on the father's or mother's occupation was largely biased toward a middle-class background. In a majority of

cases, both mother and father were educated and holding middle-class jobs. This was an advantage in so far as cultural and linguistic deprivation was unlikely to be a major cause of any deficit.

1.6 DEFINITION OF TERMS

There is a pattern in the terminology of clinical terms related to learning disabilities. The prefix dys-usually denotes a partial inability, or a partial ability, to function in a particular area. For example, dyslexia means a partial reading ability, or a partial loss of reading ability. This word structure will help to interpret clearly some of the following terms.

Dyslexia - Jordan (1972) defines dyslexia as a difficulty in processing language symbols. For the purpose of selecting children for this investigation dyslexia is defined as a condition causing difficulty in learning to read, write, and/or spell in physically normal intelligent children in spite of comfortable socio-economic status and educational opportunity and in the absence of severe emotional disturbance.

Visual Dyslexia - Visual dyslexia as used in this study refers to difficulty in interpreting ("seeing") printed or written symbols accurately. Commonly found among visual dyslexics are difficulties in visual

discrimination particularly of letter reversals and inversions, and disorders in perceiving and reproducing visual sequences. Visual retention is often poor and the rate of perception slow.

Auditory Dyslexia - Auditory dyslexia refers to difficulty in encoding (translating) speech into printed or written symbols. The auditory dyslexic finds difficulty in analysing words into sounds or syllables and in synthesizing sounds and syllables into whole words. He may have difficulty in perceiving common sound units and in auditory discrimination when short vowels and consonant blends are involved.

Dysgraphia - Dysgraphia refers to difficulty in putting thoughts into written form. Dysgraphics have difficulty in producing legible handwriting. They cannot remember how to form certain letters or numbers and thus they distort their shapes by making backward or inverted motions. Dysgraphia often involves a faulty sense of directionality (left to right).

Specific Language/Reading Disability - Specific Language/Reading Disability refers to children of average to high intelligence whose difficulties in reading, spelling, handwriting, written and sometimes oral expression interfere with academic achievement, often causing partial or complete failure.

Percentile Group - As defined by Raven (1958) the Standard Progressive Matrices Scale consists of certain fixed percentages of the population into which people are grouped according to their scores. In this way it is possible to classify a person according to the score he obtains as:-

Grade I or "intellectually superior", if his score lies at or above the 95th percentile for people of his age.

Grade II or "definitely above the average in intellectual capacity", if his score lies at or above the 75th percentile but below the 95th percentile.

Grade III or "intellectually average", if his score lies between the 25th and 75th percentiles.

Percentile Rank - In the Goodenough - Harris Draw-A-Man Scale raw scores can be interpreted in terms of percentiles. The percentile rank shows the relative standing of a child in a theoretical group of 100, representing a particular population. A percentile rank of 65 on the test means that a child ranks 65th from the bottom of a theoretical group of 100 children representative of all children his age.

Reading Age - Reading age is a figure based on the child's performance on a reading test. For example, to say that a child has a reading age of 8½ implies that his attainment in reading is at the level of the average child aged 8½.

Spelling Age - A similar figure can be obtained on the basis of a child's performance on a spelling test.

1.7 ORGANIZATION AND LIMITATIONS OF THE STUDY

This research was carried out in three distinct stages. In the first stage - Initial Classroom Screening - teachers were asked to refer any child who seemed to exhibit a significant number of the behavioural symptoms which characterise dyslexia by completing the 'Check List for Detecting Specific Language/Reading Difficulties', an instrument consisting of 12 behavioural items on a four-point scale. No less than four items in the Check List were to be ticked either ALWAYS or USUALLY for the child to be referred for further screening.

It was assumed that most children with dyslexic tendencies would be referred by teachers and prevalence could be based on this assumption. It was also assumed that amongst the "referred group" would be many pupils whose problems would not be attributable to dyslexia according to our definition of the term.

In the second screening stage - Diagnostic Testing - both intelligence and attainment tests were administered to all the referred children in order to ascertain the existence or non-existence of a clear discrepancy between intelligence level and performance in reading and/or spelling. At this stage any child who did not meet the required criteria (referred to in section 1.5 of this chapter) was excluded from the study.

In the third and final stage - Identifying Dyslexic Tendencies - the children selected as possibly dyslexic were administered the 'Screening Test for Identifying Specific Language/Reading Disability'. The purpose for this screening exercise was to be able to evaluate and carefully examine the dyslexic tendencies exhibited by these children and to try to analyse the extent of this disability.

The data collected in this research is primarily of a descriptive nature. One can only draw conclusions about dyslexia

from observable data and from analyses of raw scores. In the absence of any standardized assessment materials it was impossible to draw statistically precise conclusions from the results. There is a likelihood that some of the children who were eliminated from the study would not have been excluded had standardized norms been used. It was,however, methodically more sound to exclude any such doubtful cases. No experimental work on the nature of or extent of dyslexia was attempted, although in the early stages of the study it was hoped that a "Diagnostic Test Battery" could be devised which would provide a more comprehensive analysis of the nature of dyslexia in Kenyan children. With such an instrument, comparisons could have been made between children unselected for exhibiting difficulties in reading, spelling and/or writing and the dyslexic group. This stage of the research was not considered feasible because of lack of standardized norms required for such a test battery; time was also a limiting factor.

The sample for this study was carefully selected in order to accommodate the definition of dyslexia as used here. Pupils were selected from the so called "High Cost" schools which are considered "high priority" by both parents and teachers in educational opportunity and achievement. Many children in these schools came from middle or upper class homes. Nevertheless, one cannot ignore the fact that certain limitations are likely to exist in such an educational environment, including mother-tongue interference and unidentified cultural factors.

Although a parent questionnaire would have been most useful in obtaining data about familial background in relation to dyslexic tendencies, it was not employed in this study because of problems in familiarizing and educating parents about dyslexia.

Once a child has been identified as dyslexic measures should be taken to correct the problem. Although it is clearly evident that children in Kenya suffer from this disability,

it was not possible within the framework of this study to develop suitable methods of remediation for them. It is hoped that this research will engender further interest in this field so that in future dyslexic children are not only identified but also receive proper remediation to minimize their difficulty.

CHAPTER 2

METHODOLOGY: THE IDENTIFICATION AND INCIDENCE OF SPECIFIC LANGUAGE/READING DIFFICULTIES

2.1 THE SAMPLE

Explanations for reading difficulties are commonly attributed to emotional disturbance, low I.Q. and conditions in the home or in the school. The children selected to form the sample were chosen as far as possible:

(i) to exclude incidence of the above factors commonly associated with and thought to give rise to a difficulty in learning to read and

(ii) to conform to an acceptable definition of dyslexia.

For the purpose of this research dyslexia is defined as a condition causing difficulty in learning to read, write and/or spell in physically normal intelligent children in spite of comfortable socio-economic status and educational opportunity and in the absence of severe emotional disturbance.

The eight Nairobi City Council 'High Cost' schools were selected for this research primarily to meet the above criteria. As has already been mentioned in Chapter One, a majority of the children in these schools have come from middle class or upper class homes. Many of the parents have been formally educated, having received either a high school certificate or a university degree and are therefore in a position to provide a favourable educational environment for their children. In most cases, the teachers in these schools are well qualified, holding either a P1 or S1 teaching certificate. Stability within the teaching staff is more evident in 'High Cost' schools than in other city schools.

Children from such schools have the opportunity to enjoy the use of modern educational facilities and can participate in educational activities other schools cannot easily afford.

The sample consisted of Kenyan African children aged from 9 years to 12 years 11 months and was restricted to children from Standard IV

to Standard VI classes. 9 years was selected as the minimum criterion for age for the primary purpose of eliminating, as far as possible, any language/reading difficulties attributable to a mother-tongue factor. Children of mixed marriages were included in the study in cases where one parent was a Kenyan African.

Only boys and girls who had attended 'High Cost' schools for at least two years prior to the date of referral by the teacher were accepted into the study. This was a necessary requirement in order to ensure that educational benefits were of a similar standard for all the referred children.

Frequent changes of school or long absence from school can also have adverse effect on academic achievement. Criteria were formulated to exclude these factors; if a child had more than 3 changes of school or if he was absent from school over a long period of time he was excluded from the study.

Emotional stability or instability was established as far as possible on

(i) the teacher's response to the following question on 'Behaviour' in the "School Report", "Describe any emotional or behavioural symptoms exhibited by this child that may indicate a severe emotional condition." (see Appendix C) and

(ii) the personal judgement of the researcher as she observed each child's behaviour during the second and third screening stages.

The presence or absence of any physical abnormality was assessed by

(i) the teacher's response to the questions on 'Bodily Characteristics' in the "School Report" (see Appendix C) and

(ii) personal observation.

The criterion used to establish that dullness is not a contributing factor to the language/ reading difficulties observed in this study has been described at length in Chapter One with reference to the Progressive Matrices Test and Goodenough-Harris Drawing Test.

To ascertain that children in the sample had reading and/or spelling difficulties comparable to the specific language/reading disability characterising dyslexia the following criteria were formulated:

1. At least 4 of the 12 items in the"Check List for Detecting Specific Language/Reading Difficulties" had to be ticked ALWAYS or USUALLY for any child to be referred (see Appendix B).

2. Every child had to show evidence of retardation in the Schonell's word reading test and/or spelling test by at least one year.

This research was carried out in three stages:

1. Initial Classroom Screening - referral by teachers,

2. Second Screening Stage - diagnostic testing,

3. Final Screening Stage - identifying dyslexic tendencies. Below (sections.....) is a complete account of the procedures used to identify dyslexia in Kenyan children. In addition, a description of each of the tests used in this study is included.

2.2 INITIAL CLASSROOM SCREENING - REFERRAL BY TEACHERS

The purpose of the first stage in the research was two-fold: (1) to find and refer the children who seemed to exhibit dyslexic type behaviour, and (2) to obtain information about each child which could assist in determining the specificity and the extent of his reading and/or spelling difficulty. Two instruments were devised to achieve this purpose:

1. "The Check List to Detect Specific Language/Reading Difficulties" to find these children, and

2. The "School Report" to obtain the necessary information about each child's specific difficulties. Since these instruments have been described at length in Chapter One a detailed account of their functions need not be given here, (see Collection of Data).

The procedures used in this stage were as follows.

During the month of February 1976 the researcher met with the teaching staff in each of the eight selected primary schools to explain what the research entailed and what role they as teachers had to play in order to make the study a success. One to two hours was spent in each school discussing the "Guide to Detect Specific Language/Reading Difficulties", (a supplement to the"Check List") to familiarize the teachers with the behavioural symptoms they should 'look for' when referring children with reading and/or spelling problems. Teachers were advised on why and how they should complete the "Check List for Detecting Specific Language/Reading Difficulties" and the "School Report" for any child who seemed to exhibit specific reading and/or spelling difficulties. Details about the criteria required in selecting children for referral were emphasized including: age, nationality, class, and school factors of attendance and change of school.

Great importance was placed on the criterion which stated that the child MUST exhibit difficulty in at least 4 of the behavioural items on the 'Check List' in order to be referred.

50 copies of each of the two forms (Check List and School Report) were distributed among the class teachers from Standard IV to Standard VI classes in each school. These forms were to be completed, ready for collection by the end of March,1976. A total of 151 sets of forms had been submitted to the researcher from teachers in the eight schools by 3rd April, 1976. No forms were collected after this date.

During the month of April the 'Check List' and "School Report" were carefully checked and analysed. At this stage, 12 of the 151 children originally referred were excluded from the study for one or more of the following reasons: age, school factors and physical status - Age: Two children were 13+ and four children were younger than 9 years. School factors: In three instances, children had been admitted

into a 'High Cost' school since December 1975; in one case a child had had 5 changes of school. Physical status: One child sustained head injuries in a car accident and was therefore considered 'not fit' to remain in the study for physical reasons. Evidence from one "School Report" indicated that this child had a hearing difficulty; on these grounds he was excluded from the study. No evidence from the "School Report" was available to indicate that a severe emotional condition existed in any of the referred children. The 12 children were excluded on the basis of information from the "School Report" and from interviews with administrative staff in each school.

In a further 14 cases the data obtained were too incomplete for inclusion of the case in the study. This left 125 children who were admitted into the second screening stage - diagnostic testing.

2.3 SECOND SCREENING - DIAGNOSTIC TESTING

Knowing something about the child's intelligence level is essential for an accurate diagnosis of dyslexia. One of the main uses of the results of an intelligence test is as a means of excluding dullness as the main cause of the child's educational difficulties. Another important use of diagnostic testing is to find out whether there is a discrepancy between the child's intellectual ability and his performance in spelling and reading. For these reasons both intelligence tests and attainment tests in reading and spelling were administered to the referred children.

The diagnostic tests were administered in two separate sessions. First, the intelligence tests were administered to the referred children in small groups of not more than ten during the month of May 1976. In this case, the children were placed sufficiently far apart to prevent copying. On the basis of these test results those children who did not meet the requirements formulated for intelligence level were excluded, (See 2.3.1 below).

During the months of June - July 1976 the attainment tests were administered individually to those children who had satisfied the necessary criteria up to this stage in the research. The results of the attainment tests had to indicate a difference of at least one year between chronological age and reading age or spelling age for inclusion into the dyslexic group (in the final screening stage).

Room facilities for the testing sessions were provided for by the staff administration in each school. The teachers and headmasters were very willing and co-operative in arranging suitable times for testing the children in both the group sessions and the individual sessions. Where 25 to 30 children in a school were being tested in groups of not more than ten an effort was made to arrange the groups according to classes to avoid inconveniencing the class teacher.

2.3.1 Intelligence: Standard Progressive Matrices and Goodenough - Harris Draw - A - Man Scale.

Since there were no standarized intelligence tests with local norms

available for this sample it was considered feasible to select two intelligence tests which had been experimented on in other African Countries and from them obtain an estimate of intelligence level. The Standard Progressive Matrices and the Goodenough - Harris Draw - A - Man Scale were selected for this purpose. Any child who performed at 25 percentile or below (Grade IV) in the Standard Progressive Matrices Test or below 25 percentile rank on the Goodenough - Harris Draw - A - Man Scale was excluded from the study. This meant that only those children whose results indicated that they were intellectually average or above average on both tests could remain in the study. This high criterion was formulated to ensure a reliable estimate of intelligence level.

The two tests were also selected for additional advantages. These were: easiness in administration; their non-verbal nature which allowed them to be used with non-readers; and the fact that they were not timed, an advantage to dyslexic children.

Below is a description of each of the tests:

The Standard Progressive Matrices: Sets A, B, C, D, and E

On each page of the test booklet is a large black and white pattern with a piece "missing", and the child is required to find the missing piece from among six to eight alternatives in the lower half of the page. The scale consists of 60 patterns or problems divided into five sets of 12. In each set the solution to the first problem is as nearly as possible self-evident. The problems which follow become progressively more difficult. A person's total score provides an index of his intellectual capacity, whatever his nationality (Raven, 1956).

The test as a whole can be described as a test of observation and clear thinking. Although it is not a test of general intelligence, it provides a reliable estimate of a person's output of intellectual activity during the test. Scores were used to classify a person's output of intellectual activity according to percentile groupings of Grade I, II, III, IV or V.

Goodenough - Harris Draw - A - Man Scale (Revised Edition)

This is a particularly easy test to give, the child simply being encouraged to draw the best picture of a man that he can. The artistic quality of his product does not enter into the scoring; rather, a good score depends on accurate observation and the development of concepts of the human figure and clothing. The presence or absence of 73 specific points is noted, ranging from: "head present", "legs present", to "sleeves and trousers non-transparent" and "apposition of thumb shown" etc. Scores were converted into percentile rank to obtain an estimate of the child's general intellectual ability.

The tests were administered successively, beginning with the Standard Progressive Matrices. A range of from 25 to 50 minutes was required for all the children to complete the test. The Goodenough - Harris Draw - A - Man Scale was administered immediately following the completion of the Progressive Matrices Test, with a range of from 15 to 20 minutes needed to complete it.

Out of the 125 children who sat the two tests 83 children failed to meet the criterion for intelligence by performing at 25 percentile or below in the Standard Progressive Matrices or below 25 percentile rank on the Goodenough - Harris Draw - A - Man Scale, and were therefore excluded from the study. This means that nearly 72 percent of the omissions from the study came as a result of low intellectual ability. Possible reasons for this high percentage of low intelligence results include:

(1) the test results may have been inaccurate enough to eliminate some cases who could have performed satisfactorily had local norms been available, and (2) teachers may not have been able to differentiate sufficiently between the behavioural symptoms charactersing low intelligence and behavioural symptoms characterising dyslexia, as symptomatology in both cases tends to show similarities. Nevertheless, one can quite safely conclude that the results of those children who did meet the criterion for intelligence level indicated a reliable estimate of average or above average intelligence.

2.3.2 Attainment: Schonell Reading and Spelling Tests.

The Schonell Graded Word Reading Test and the Schonell Graded Spelling Test A were selected to obtain estimates of attainment in Reading and Spelling. Since these tests were used extensively in at least 3 of the "High Cost" schools with favourable success (according to administration and teaching staff) they were not pre-tested for reliability. The fact that the eight "High Cost" schools used British and American materials for beginning reading was an additional asset. It was therefore assumed that results from these tests could provide a sufficiently reliable estimate of attainment on their face value for the purpose of this study.

The child had to exhibit a difference of at least one year between chronological age and reading and/or spelling age for inclusion in the final screening stage. This criterion was formulated to ensure that a definite discrepancy existed between potential and performance in reading and/or spelling.

Schonell's Graded Word Reading Test -

This test has a reading age range from 5 to 15 years. At each year level there are ten words phonically both regular and irregular. Reading age is based upon graded words becoming progressively more difficult. Since there is no time limit the child has ample opportunity to use his mechanical word reading ability to the full. A single reading age is calculated.

This test which consists of a list of words presented without any contextual clue, reveals the child's ability to recognise whole words automatically and his ability to analyse phonically and to synthesize words not immediately recognised.

Schonell's Graded Spelling Test A -

The spelling age range is from 5 to 15 years with ten words at each year level. The first ten are regular three - letter words but thereafter words phonically both regular and irregular are included. Spelling age is based upon graded words becoming progressively more difficult.

Out of the 151 children initially referred, 42 children sat the Schonell Graded Reading and Spelling tests, the rest having failed to meet the required criteria. The two tests were administered to individual children in one sitting during the months of June - July 1976. A range of from 20 to 50 minutes was required for the children to complete both tests. 7 children performed at or above chronological age in both the reading and spelling tests and therefore were excluded for the reason that they were not sufficiently retarded. In all, 116 children were excluded from the study for failing to meet the required criteria in the following order: age, school factors of attendance and change of school, physical status, general intelligence level, degree of reading and/or spelling retardation and incomplete information. This left 35 children aged 9 years to 12 years 11 months who gave evidence of quite specific reading and spelling difficulties. The distribution of the reasons for exclusion is tabulated below.

TABLE 1

Distribution of Primary Reasons for Exclusions from the Final Stage of the Study

Reasons	Total exclusions (116)
Age: 13 years +	1.75%
Age: Less than 9 years	3.45%
School factors	3.45%
Poor physical status	1.72%
Intelligence level too low	71.55%
Not sufficiently retarded in reading and spelling	6.04%
Incomplete information	12.04%
Total percentage	100

None of the children who were initially referred was deemed to be severely emotionally disturbed.

2.3.3 Rationale for Using Overseas Tests

This section aims briefly to discuss some of the main factors that affect Africans' scores on the Raven's Progressive Matrices and the Goodenough - Draw -A- Man Test that are relevant to this study.

The Raven's Progressive Matrices has been extensively used by individuals carrying out psychometric research on the African Continent.

Wober (1967), Vernon (1967) and Poole (1968) have argued that Western - Orientated tests are appropriate for assessing any people's ability to function in cultures which are increasingly westernized. Wober (1969) suggests that the Matrices must be regarded as centricultural. Scores on Matrices could well be seen as performance in acculteration.

In a study carried out by Irvine (1969) in Central Africa he hypothesized that item difficulties would change from culture to culture because of environmental differences between cultures and that test scores would approach Western patterns as individuals became more acculturated and as groups adopted western value-systems. He further claimed that both hypotheses had had recent verification by Vernon (1967) and Klingelhofer (1967).

Klingelhofer's (1967) results for Tanzanian African and Asian secondary school students support the contention that test performance is a function of environmental factors. The Asian students were quite urbanized, living in towns with schools readily accessible and with school fees available. The African students mainly came from rural environments with a much poorer economic setting, with schools more remote and with payment of school fees likely to be a serious problem for the family. The results indicated that

Asian students performed considerably better than the African students on the Matrices Test.

The sample in this study had similar environmental advantages to those of the Asian students in Klingelhofer's study. Most of the children lived in Nairobi, had excellent school opportunities and came from middle class or upper class homes with payment of fees easily available. Therefore, one should be able to expect a fairly accurate estimate of assessment on the Matrices Test from such a sample.

Wober (1969) suggests that one factor that may clearly interact with test results is that of the race of tester. Marwick (1956) has shown that use of European or African administrators, can affect the results given by Africans in a group situation. Baratz (1967) has shown how the race of the examiner can affect anxiety and thereby test performance in an inter-racial situation with American negroes. Vernon (1967) found that

Swahili explainers (regardless of language or social role) are superior to English.

A majority of the children in this research have been in direct contact with white teachers at some stage during their school years. European teachers and administrators are generally well respected and are considered as very efficient people by the parents of these children. In these circumstances children in the "High Cost" schools may well perform just as well with a white test administrator as with a local administrator. In many cases the presence of a white administrator (who is known) may tend to enhance the testing situation rather than cause anxiety.

Vernon (1967) found that instructions for the Matrices were understood better in English than in Swahili. He also found that the performance of the African is more susceptible to motivational or attitude effects than is usually found in American or British researches.

Silvey (1963) found that when special introductory procedures were used during test administration variance on group scores decreased and means rose. In his study with Tanzanian school children Klingelhofer (1967) gave the examinees detailed coaching and help in the solution of the first five problems of Set A of the Matrices. His objective was to try and ensure that the examinee understood the test and the procedures for recording responses on a separate answer sheet.

A similar procedure was used in this study for the same purpose as noted above. Detailed help was given in the solution of the first three problems of Set A and every child's responses were carefully checked for the first five problems to ensure that the child understood the test and the procedures for recording.

Hunkin (1950) investigated the use of the Goodenough Draw-A- Man Test for measuring the intelligence of African Children. The sample tested was repre-

sentative of the urban school-going Native children in Durban, aged from 6 - 13 years inclusive. Results indicated that the Bantu children made a relatively lower score than did white children. The low scores on the test were ascribed to culturally determined characteristics of personality and interests. Correlations between percentage of success on each of the 51 points of the Goodenough scale between Bantu and American groups varied from 0.94 and 0.91 with a mean of .88. He postulated that these correlations were sufficiently high to justify the use of the test with Bantu children. He suggested a new set of norms for Bantu school children.

In the present study, children tested on the Goodenough - Harris Drawing Test with a total score of 71 points seemed to have scored considerably higher than did the Bantu children described by Hunkin (see 4.1.2).

2.4 FINAL SCREENING - IDENTIFYING DYSLEXIC TENDENCIES

The primary function of this research was to be able to identify the behavioural symptoms exhibited by children with specific language/ reading disability. A "Screening Test" needed to be devised which could show relative strengths and weaknesses in perceptual-motor functions (Visual, Auditory and Kinesthetic) and which could reveal deficits that frequently exist in one or more of these vital areas of receptive and language performance. The "Screening Test" devised for this purpose was adapted from the "Jordan Written Screening Test for Specific Reading Disability" and the "Slingerland Screening Test for Identifying Children With Specific Language Disability", Form C and Form D (Jordan, 1972; Slingerland, 1974). This "Screening Test" was not intended to yield a concrete scale or a sequence of scores which could be converted into standardized norms. Rather, the eight subtests were designed to allow one to examine specific language/ reading difficulties, including: sequence; omissions, substitutions and insertions; spatial and directional confusion; visual perception and memory; auditory perception and memory; visual discrimination; auditory

discrimination and kinesthetic-motor response.

Instructions for each subtest and for administration of the "Screening Test" were derived from Slingerland's (Form D) Screening Test - Manual (1974). There were no major changes in the administration of the test except that in the adapted "Screening Test" the children were allowed to complete all the subtests, whereas in the Slingerland Screening Test (Form D) time limits were employed in some of the subtests.

2.4.1 The Pilot Study

The "Screening Test" which was later entitled "Screening Test for Identifying Children with Specific Language/Reading Disability" was pre-tested on children unselected for exhibiting reading and spelling difficulties to determine if the test had any verbal or cultural biases which could interfere with performance.

In October 1975 a sample of children had been selected at Lavington Primary School (one of the "High Cost" schools) from Standard IV to Standard VI classes in order to examine the viability of using certain

overseas standardized tests which could be put together to form a "Test Battery". Intentions were to be able to make comparisons between a'control group' and the dyslexic group. Later on, the idea of including a "Test Battery" in the research was dropped. 10 children had been randomly selected from each of the three standards making up a sample of 30 (12 girls and 18 boys). This group of children was selected to sit the trial "Screening Test" in January 1976. Only 21 of the 30 children were available to sit the trial test. In four cases, the children had been transferred to other schools; three of the children were considered retarded in reading and spelling by their teachers and therefore did not qualify to sit the test; in another two cases, the children were not present when the test was being administered.

The trial -"Screening Test" was administered individually to each of the 21 children. Approximately one hour was required by a majority of the children to complete the 8 subtests.

The trial test showed the following results. Out of a total of 121 possible corrections on 6 of the 8 subtests the 21 children made an average of 05.7 percent errors. The percentage of errors made by individual children ranged from 0.8 percent to 9.9 percent (see Appendix A, Table 1). The mean percentage of errors made by the 9 and 10 year old children (7.9% and 6.4%) was considerably higher than the mean percentage of errors made by the 11 and 12 year old children (3.8% and 4.6%) (see Table 2). However, it was not possible to pin-point errors made by the different age groups to any particular item in the subtests with an exception of the dictated word 'code' in subtest 4. Only 5 children spelt 'code' correctly, indicating that the item was unfamiliar to most of the children in the group. For the rest of the test items, not more than 4 errors were made on the same item.

In conclusion, the "Screening Test" was found to be sufficiently free of verbal and cultural biases and it could therefore be assumed that the majority of errors

made on the 8 subtests by dyslexic children would be made as a result of a specific language/reading disability.

One of the tests which had been trial-tested for the "Test Battery" was the Reading Section of the "Wide Range Achievement Test" (Jastak, 1965). These reading results have been included in Table 2 below to show how the children in the sample performed on a reading test (percentile rank) and how the same children performed on the trial "Screening Test" (number of errors).

TABLE 2

Trial - Test: Number of Errors (Percentage) on the "Screening Test" and Reading (Percentile) on WRAT.

	WRAT (Reading Percentile)		Screening Test (No. of Errors, %)	
	No. of chn.	Mean	No.of chn.	Mean
Age:				
9 years	4	95.0% ile	4	7.9%
10 years	5	71.6% ile	5	6.4%
11 years	7	87.0% ile	7	3.8%
12 years	5	61.0% ile	5	4.6%
Total	21	78.6% ile	21	5.7%

(Total No. of errors on 'Screening Test' - 121).

No comparisons could be made between the two tests because the "Wide Range Achievement Test" (WRAT) was interpreted in terms of percentile ranks, whereas in the "Screening Test" the percentage of errors was simply recorded from raw scores.

The "Screening Test" was revised; 'code' was replaced by 'rode'; alterations were made to improve the layout of the subtests including headings; and testing procedures were simplified to ensure smooth administration of the subtests.

2.4.2 The Screening Test for Identifying Children with Specific Language/Reading Disability.

The purpose of the screening test was to screen from among a group of children those who were beginning to show difficulties in the area of language - reading and/or spelling, writing and written expression - and those with already present specific language/reading disabilities.

The screening test contains 8 subtests (see Appendix D). The first seven are designed for group administration, although they may also be given to individuals alone,

and the last and 8th subtest is for individual testing only. The subtests show relative strengths and weaknesses in perceptual motor functions (Visual, Auditory and Kinesthetic) and they reveal deficits that may exist in one or more of the vital areas upon which language, receptive and both verbal and written, depends since they afford an opportunity to examine sensory - motor functions in the process of association and interaction of perception, discrimination, integration, memory and performance. The first three tests require performance from a Visual stimulus. All the subsequent sub-tests require performance from an Auditory stimulus. Each child's performance is evaluated separately and considered in the light of the overall performance of the peer group. Performance on the sub-tests is also related to the individual's general ability and achievement. Basic to this achievement is the knowledge of what each subtest is designed to test.

Description of the Subtests -

Test 1 - Copying from a Sample.

In this subtest, the children copy from a wall chart, with little stress placed upon memory. This test requires Visual perception in association with a Kinesthetic response. Accuracy in copying; correctness of letter formations; the presence or lack of presence of reversals, inversions, transpositions, omissions or substitutions; spacing within and between words, use of lines and page space; and the overall quality of the handwriting form the basis of evaluation. These factors in performance are also used as the basis of comparison with the later subtests which involve longer memory, working without a model for reference.

Test 2 - Visual Perception - Memory with Visual Discrimination

This is a test of Visual perception - memory of 14 items with words, letters and numbers seen in a brief exposure, one at a time, on a card. After the model is withdrawn, distraction and delay of about 15 seconds are

used to test memory, but no writing is required. The item recalled is matched to an item selected from a group printed on the test page. Visual discrimination must be made of symbols and sequences in letter and number groups that contain reversals and transpositions or degrees of similarity in configurations. The performance here can later be compared with Test 3 in which Visual perception - memory is linked to a Kinesthetic response.

Test 3 - Visual Perception - Memory and Kinesthetic - Motor Performance.

Visual perception and memory are now linked with Kinesthetic - motor performance. Words, phrases, letter and number groups and geometric forms are exposed briefly on cards. Distraction and delay of about 15 seconds occur between exposure and performance to ensure demand upon memory, and the 12 items are drawn or written upon the test pages. With no model before him, the child must have a 'Kinesthetic' as well as a 'Visual' memory of what he has perceived. In addition to giving clues about Visual functioning, the test affords an opportunity to evaluate motor performance

by comparing the writing to that of the first subtest performed under minimal stress. The use of geometric forms gives information about the child's perception of space and direction.

Test 4 - Auditory Perception - Memory with Visual - Kinesthetic - Motor Association

Auditory perception and memory are now linked with Visual - Kinesthetic motor association. Groups of letters, numbers and words are dictated to be written on the test pages after a brief period of distraction and delay. Performance on the 36 items in this subtest is considered in the context of earlier and subsequent subtests. Visual - Kinesthetic memory, in addition to Auditory perception - memory, is essential to successful performance on this test because the child has no external models of the graphic symbols. However, he does not need to discriminate among possible printed reversals and transpositions as he has had to do in previous subtests.

Test 5 - Auditory Discrimination with Visual Kinesthetic Linkage

This also tests the Auditory - Visual - Kinesthetic linkage but adds the requirement of making an Auditory discrimination of single and blended sounds within the sequence of sounds in whole words. In the first group of 10 words dictated, the child must discriminate the initial phoneme and, after a slight distraction and delay, write it in the test booklet. In the second group of 10 words, the requirement is changed to the final sounds of words; for the third group of 10 words, the child must discriminate the initial two sounds of consonant blends, and for the fourth group of 10 words, the requirement is for the final two sounds. Thus, Auditory perception, discrimination, sequencing and memory are tested in association with an inner Visual - Kinesthetic memory but not with Visual discrimination.

Test 6 - Auditory Perception - Memory with Visual Association.

Auditory - Visual linkage is tested and the Kinesthetic - motor requirement of writing is eliminated. Dictation of a word

or letter or number group is followed by a brief distraction and delay before it is located among a group of 14 items printed on the test page. Auditory perception - memory is linked with Visual perception and discrimination, for which an inner visual memory is required, so that correct identification of the letter and number symbols may be made.

Test 7 - Orientation

This subtest tests possible confusion in general orientation and the ability to give an idea the desired expression in writing. The child is given three different pieces of instruction which he must write answers for. Therefore, Auditory memory of the words to use in association with their Visual - Kinesthetic counterparts is necessary for successful written performance.

Test 8 - Ecolalia and Auditory Sequential Memory

In this test the child is asked to repeat THREE TIMES the phrases, sentences or a series of digits dictated by the examiner.

Auditory perception and memory are being tested. The phrases and sentences indicate how well he perceives and remembers words in a sequence. If a child omits, substitutes, inserts and transposes within phrases, he may also do so in sentences or in a series of digits.

Administration of the Screening Test -

From September to November 1976 the "Screening Test for Identifying Children with Specific Language/Reading Disability" was administered individually to the 35 children who gave evidence of quite specific reading and/or spelling difficulties. A test booklet had been devised to enable the child to complete the items on the 8 subtests with ease, and to simplify the correcting of the Screening Test by the examiner.

Directions for administering the tests were adapted from the Manual for the "Slingerland Screening Test for Identifying Children With Specific Language Disability", Form D (Slingerland, 1974). All the 8 subtests were administered

in one session. In the Slingerland Tests, time limits were employed in certain subtests. However, it was considered feasible for the children in this study to be allowed to complete each subtest; the total time required by individual children ranged from 60 to 75 minutes.

Evaluating Performance on the Tests

Slingerland (1974) states that experimentation with the screening tests indicated that a total of 13 to 15 errors on subtests 3 to 8 could be considered a sufficient warning and might generally be considered as the "break-off" point with 25 to 30% of the children in each class making this number or more of errors. Within this percentage, the kinds of error were highly consistent. The remaining 70 to 75% performed well on the tests and made few errors that followed consistent patterns. A total of 16 to 18 errors on subtests 2 to 7 was considered a feasible "break-off" point for this study.

Since the tests are designed to yield a negative score (total wrong) correct items

were not marked. Only errors and areas of confusion were noted for evaluation purposes. Test 1, copying from a sample and Test 8, ecolalia and auditory sequential memory, were not included with the totals for subtests 2 to 7, but served as a basis of comparison with them. Subtests 2 to 7 had a total of 121 points.

A summary sheet was completed for each child (see Page 171-172). Information from the corrected test booklets was transferred to the summary sheet under: Points, Analysis Showing Confusion and (X) columns indicating general weaknesses.

(i) Points - In this section the sum of Rights and Wrongs on each of the subtests should equal the number of points printed in the first column under Total. The total number wrong for Tests 2 to 7 are recorded on the line at the bottom labelled Total Errors. Slingerland's directions for scoring the tests were carefully employed in this study.

(ii) Analysis Showing Confusion

The types of errors recorded in this section included: reversals, inversions, transpositions, suggesting directional confusion; omissions, substitutions and insertions, suggesting poor recall; self corrections; incorrect letter, number and geometric forms; and more than one item marked. Total Errors and Confusions are recorded on the line at the bottom of the summary sheet under Analysis.

A wide divergence between Total Errors shown under POINTS and Total Errors and Confusions shown under ANALYSIS can be highly significant of Specific Language/Reading Disability.

(iii) Weaknesses (X) - An "X" is registered under the column Spatial Organization for the appropriate subtests when items on the test paper are misplaced, out of line or not placed one under the other or when margins are disregarded. Letter size Relationship and Penmanship are indicated with an "X" for the appropriate subtests when tall letters such as

"h" are no larger than an "a" or letters with stems that go below the line such as "q" or "p" are written with the tails of the letters standing on the writing line. The "X" indicates overall weaknesses in penmanship and possible Kinesthetic - motor strength and is taken into account when the total evaluation is made.

A "Comments" column is provided for useful notations relative to a specific subtest.

Each subtest is evaluated separately and then compared with the other subtests to obtain an overall assessment of performance. If the child has specific language difficulties then it is likely that the same type of errors or confusions that occur in the first subtests will recur in subsequent subtests. In the final evaluation the totals made on the Screening Test are to be related to such other factors as the following:

1. Intelligence level - A child with an average to high intelligence level, whose achievement in the language areas

is not commensurate with his intelligence, can be suspected of having specific language/reading disability.

2. Achievement - Highly intelligent children can be expected to achieve well above age level, average children at or somewhat above age level, and dull children may not be up to age level even if they are achieving. When achievement falls below expectations, disability can account for inadequate performance when related to the Screening Test results and other factors.

2.4.3 Different Forms of Dyslexia

Research clearly indicates that not all children described as dyslexic exhibit the same signs and symptoms. It has therefore been suggested that there may be different types of dyslexia which can be recognized by different patterns of disability (Naidoo,1972).

Jordan (1972) discusses three forms of dyslexia: Visual dyslexia; Auditory dyslexia and dysgraphia.

Visual dyslexia as used in this study refers to difficulty in interpreting printed or written symbols accurately. Commonly found difficulties among visual dyslexics include: difficulties in visual discrimination, particularly of letter reversals and inversions, and disorders in perceiving and reproducing visual sequences. Visual retention is often poor and the rate of perception slow.

Auditory dyslexia refers to difficulty in translating speech into printed or written symbols. The auditory dyslexic finds difficulty in analysing words into sounds or syllables and in synthesizing sounds and syllables into whole words. He may have difficulty in perceiving common sound units and in auditory discrimination when short vowels and consonant blends are involved.

Dysgraphia refers to difficulty in putting thoughts into written form. Children with dysgraphia have difficulty in producing legible handwriting. They cannot remember how to form certain letters or numbers and thus they distort their shapes by making backward or inverted motions. Dysgraphia often involves

a faulty sense of directionality.

Jordan devised a "Dyslexic Profile" which was adapted and used in this study (see Appendix D). The 'Profile' consists of a list of the main symptoms which characterise each of the three forms of dyslexia. The degree of the severity of the disability is indicated on the 'Profile' as: none, moderate, pronounced or severe.

An effort was made in this study to assess the 'Screening Test' responses made by the children in the context of the "Dyslexia Profile" and to determine the degree of the severity of dyslexia by examining the overall performance of the child.

Attempts to identify differing patterns of disability among dyslexic children are of more than theoretical significance. They are of crucial importance to the planning of remedial education. If there are different sub-groups each presenting different symptoms, then it is unlikely that one method of teaching will be equally successful with all dyslexics.

2.5 INCIDENCE OF DYSLEXIA

To what extent does the disability described as dyslexia occur among Kenyan Children? One cannot really obtain an answer to this question from this study. Only that small proportion of the school population that was selected for this research could be investigated. Even so, it is likely that the stringent criteria required for this research produced too low an estimate of the real incidence of dyslexia within the population.

The population consisted of 1,862 Kenyan African children who were attending the Nairobi City Council 'High Cost' Primary Schools. Ages ranged from 9 years to 12 years 11 months and children were restricted to Standard IV to VI classes. The "High Cost" Schools included: Kilimani Primary School, Westlands Primary School, Nairobi Primary School, Muthaiga Primary School, St. George's Primary School, Karen 'C' Primary School, Hospital Hill Primary School and Lavington Primary School.

In the "Initial Classroom Screening" stage teachers were asked to refer any child who seemed to exhibit behavioural symptoms characterising dyslexia. It was assumed that most of the children with dyslexic tendencies would be referred by teachers and prevalence could be based on this assumption. It was also assumed that amongst the "referred group" would be many pupils whose problems would not be attributable to dyslexia according to the definition used in this research.

In the "Final Screening" stage the number of children identified as dyslexic could be obtained and on the basis of this information an estimate of incidence could be established.

2.6 SUMMARY OF CHAPTER 2

This research was carried out in three stages. In the initial screening stage teachers were asked to refer children aged 9 years to 12 years 11 months from the 'High Cost' Primary Schools who seemed to exhibit dyslexic tendencies. Information from schools was obtained to assess the specificity of their language/reading difficulties. It was assumed that an estimate of prevalence could be obtained on the basis of these referrals. A total of 151 children were initially referred.

The second screening stage involved diagnostic testing to ensure that the referred children were of normal intelligence and that evidence of a discrepancy between ability and achievement existed in each case. In all, 116 children were excluded from the study for the following reasons: age, school factors of attendance and change of school, physical status, intelligence level and degree of retardation in reading and/or spelling. This left 35 children who gave evidence of quite specific reading and/or spelling difficulties.

In the final screening stage a 'Screening Test' for identifying specific language/ reading disabilities was administered to the 35 children. From these results one was able to examine dyslexic tendencies and analyse the extent of the disability. The suggestion that different forms of dyslexia can be identified was investigated.

CHAPTER 3

RESULTS: THE CHECK LIST AND SCHOOL REPORT

3.1 THE CHECK LIST

Altogether 35 children, 24 boys and 11 girls, gave evidence of quite specific reading and/or spelling difficulties. All were of at least average intelligence. They were of normal physical status and were judged to be emotionally stable. They had had normal educational opportunities. They had either a reading age or a spelling age of one or more years below chronological age. The results discussed in this and subsequent chapters are restricted to this select group of children, henceforth referred to as the "dyslexic group".

Information reported in this section was obtained from class teachers.

Teachers were asked to complete the "Check List for Detecting Specific Language/ Reading Difficulties" for those children within the Standard IV to VI classes who manifested specific behavioural symptoms indicative of probable or potential interference

with adequate development in reading, writing and spelling, and therefore in other academic achievement.

The "Check List" consists of 12 behavioural items which describe the main dyslexic-type symptoms. The teacher notes the numbers of behavioural difficulties and to what extent these difficulties are manifested by ticking one of the following categories for each item on the "Check List": "Always", "Usually," "Rarely" or "Never". "Always" and "Usually" are indicative of a behavioural difficulty; "Rarely" and "Never" indicate that the problem is minimal or doesn't exist.

3.1.1 Frequency of Behavioural Symptoms

The frequency with which the behavioural symptoms were noted is given below:

TABLE 3

The "Check List for Detecting Specific Language/ Reading Difficulties": Frequency of Behavioural Symptoms (Teachers' Report)

Behavioural Symptoms	Dyslexic Group (35)
Has Difficulty in Reading	
Always	17
Usually	15
Rarely	3
Never	0
Unknown	0
Has Difficulty With Spelling and/or Writing	
Always	26
Usually	9
Rarely	0
Never	0
Unknown	0
Omits Letters, or Adds Letters to Words	
Always	10
Usually	15
Rarely	6
Never	0
Unknown	4

Table 3 (continued)

Behavioural Symptoms	Dyslexic Group (35)
Puts Words, Letters or Numbers in the Wrong Order	
Always	8
Usually	12
Rarely	13
Never	1
Unknown	2
Seems Unable to Learn Sounds	
Always	7
Usually	13
Rarely	7
Never	5
Unknown	3
Has Difficulty Pronouncing Words and Phrases	
Always	16
Usually	16
Rarely	2
Never	0
Unknown	1

Table 3 (continued)

Behavioural Symptoms	Dyslexic Group (35)
Seems Unsure of Left and Right	
Always	3
Usually	2
Rarely	9
Never	18
Unknown	3
Finds Arithmetic Difficult	
Always	16
Usually	13
Rarely	0
Never	3
Unknown	3
Seems Confused Over Time and Dates	
Always	5
Usually	8
Rarely	10
Never	7
Unknown	5

Table 3 (continued)

Behavioural Symptoms	Dyslexic Group (35)
Dictation Must be Frequently Repeated	
Always	19
Usually	11
Rarely	4
Never	0
Unknown	1
Appears Clumsy	
Always	6
Usually	6
Rarely	13
Never	8
Unknown	2
Shows Irregularities and Inconsistencies in Performance	
Always	8
Usually	14
Rarely	4
Never	4
Unknown	5

All 35 children had difficulty with spelling and/or writing. In 30 or more of the cases, children manifested difficulties in reading, pronunciation and dictation. A majority of the children found Arithmetic difficult, but in 3 cases children had no apparent problems. In 20 to 25 cases these difficulties were noted: Omissions and insertions; sequential order; perception and auditory discrimination of sounds; and irregularities and inconsistencies in performance. Only 5 children manifested difficulty in distinguishing left and right; 12 children showed indications of clumsiness and 13 children seemed confused over time and dates.

These results are fairly consistent with later findings on the "Screening Test" administered in the final stage of the research. This indicates that the teachers' reports were quite reliable and that, in spite of the fact that many teachers knew little about dyslexia prior to this investigation, in a majority of cases, they were able to identify those children with specific language/reading difficulties from within a class of 35 to 40 children.

3.1.2 Number of Behavioural Symptoms Reported for Individual Children

The number of behavioural difficulties reported for each child was calculated, the resulting scores ranging from 4 to 12 (see Table 4 below). One of the criteria for acceptance into the study was that a minimum of 4 items on the "Check List" had to be ticked "Always" or "Usually".

TABLE 4

The Distribution of the Number of Behavioural Symptoms Reported for Individual Children

	Dyslexic Group
5 or 6 Behavioural Symptoms	10
7 or 8 Behavioural Symptoms	12
9 or 10 Behavioural Symptoms	9
11 or 12 Behavioural Symptoms	4
Total number of children	35

The results show that 12 children in the dyslexic group exhibited difficulties in 7 to 8 of the 12 behavioural items, this being indicative of pronounced cases of dyslexia. In 13 cases, children manifested problems in 9 to 12 of the items, suggesting very severe cases of the disability. These findings are comparable with the results in Chapter 5 in relation to the severity of dyslexia in individual children.

3.2 THE SCHOOL REPORT

Socio-cultural deprivation is known to be a major factor in the general development of children and to contribute to backwardness in reading. Parental interest, or lack of interest, in their children's achievement has been shown to be associated with reading retardation (Naidoo, 1970). How far have such factors contributed to the reading difficulties of the children in this sample? It is of interest to find out how many children had received some kind of extra help at school. This would give some indication of the extent to which these problems were recognized even if their nature was not understood.

Behaviour in school was noted. This sample of dyslexic children was selected to exclude those with emotional problems severe enough to be the main cause of the difficulty, but the emotions of an intelligent child who experiences a specific difficulty in learning to read and to write and who fails miserably year after year are almost certain to be disturbed in some way.

The "School Report" was devised to assist the researcher in determining the extent to which the referred child was handicapped in school by his reading, spelling and/or writing difficulty and to obtain information about the specificity of the difficulty. Information from the questionnaire relating to age; socio-economic status of parents; change of school and attendance; extra tuition; parental interest in progress and behaviour; performance in school work and behaviour; physical status; and the teachers' estimate of intelligence was used in this research.

The data obtained in this section were obtained from class teachers and from the administrative staff from the children's schools.

3.2.1 Age

One of the criteria of the study was that the child must be at least 9 years and must not exceed 12 years 11 months to be included. Table 5 records the distribution of age among the dyslexic group.

TABLE 5

Distribution of Age - Dyslexic Children

Age	Dyslexic Children
9 to 9 yrs. 11 mths.	12
10 to 10 yrs. 11 mths.	11
11 to 11 yrs. 11 mths.	8
12 to 12 yrs. 11 mths.	4
Total number of children	35

13 of these children were from Standard IV; 18 from Standard V; and 4 from Standard VI.

3.2.2 Socio - economic Status of Parents

Socio-economic status was determined from father's or mother's occupation. The class teachers were asked to report the occupation of the parents; where necessary, this data was supplemented with information from the administrative staff.

The different occupations reported were grouped into 11 main categories as shown in Table 6 below.

TABLE 6

Socio-economic Status Based on Occupation of Father or Mother

Occupation	Dyslexic Group
Member of Parliament	2
Commissioner	1
Director or Manager of Company	5
Executive of a Bank	1
Chief Architect	1
Lecturer (in a college)	1
Administrator or Supervisor	7
Auditor, Accountant or Secretary	3
Army or Prison's Officer	3
Engineer or Mechanic	4
Businessman, woman	7
Total number of children	35

It is evident from this data that the majority of children in the dyslexic group belong to either middle class or upper class homes. In two cases the mother represented the occupational status of the home.

Information about the educational status of parents was obtained from the administrative staff. In 22 cases both mother and father were well educated. Six cases were reported where only the father was educated and in 5 cases the educational status was unknown. The 2 mothers who represented the occupational status of the home were both well educated.

3.2.3 Changes of School and Attendance

The number of schools attended by a child was one of the criteria in selecting the dyslexic children. No child was included if he had had more than three changes of school.

TABLE 7

Number of Changes of School Since the Beginning of Standard I

Number of Changes of School	Dyslexic Group
0	29
1	4
2	1
3	1
4	0
Total number	35

From Table 7 one can clearly note that most of the children had attended the same school since the beginning of Standard I.

Intake in the "High Cost" schools is very competitive. Once a child has been guaranteed a place in one of these schools, it is quite unlikely that he will be changed to other schools. This accounts for the high rate of pupil stability in this school population.

None of the dyslexic children had been absent from school for long periods of time since Standard I. At the time of investigation, information was requested from schools regarding the regularity or otherwise of attendance during the current year. Attendance was recorded as regular or irregular. Irregular attendance was reported in 2 cases. All the other children attended school regularly.

3.2.4 Extra Tuition

Some caution must be exercised in interpreting the findings reported in this section, since the information obtained relates to treatment received in the past as well as the present. No information was obtained about

6 of the dyslexic children. No help had been given at school or from any other remedial services to 15 children (42.9%) as is shown in Table 8 below. Some help had been organized for 14 children (40%).

Extra tuition or special arrangements took several forms inside and outside school. In the school, these included placement in special classes which were withdrawn from the class for short periods. Individual help was most often given by a member of the school staff and in a few cases by a visiting remedial teacher. Outside school, parents were paying for privately arranged individual tuition.

The only help received by 5 children was individual coaching by the class teacher. Six children had been put into a special remedial class, receiving help from a visiting remedial teacher. In 3 cases, children were receiving privately arranged individual tuition. No child seemed to be receiving more than one type of help.

TABLE 8

The Percentage of Dyslexics to Whom No Help or Some Help had been given.

	Dyslexic Children (35)
No help given	42.9%
Some help given	40.0%
Unknown	17.1%
Total	100

This information clearly indicates that some effort has been made to help children with specific reading and spelling difficulties. The majority of those who had been helped were given tuition within the school. The inadequacy of facilities is shown by the fact that such children still had severe reading and/or spelling difficulties. This is no reflection on the teachers. They have the wish to help but frequently lack the knowledge.

In some cases class teachers and visiting remedial teachers complained that some children did not seem to learn anything, no matter how much the teacher tried to help. Failure to recognize the nature of these children's difficulties could be a reason for this lack of progress. The child with dyslexia often has difficulty in associating sounds with symbols, a difficulty unrelated to the level of intelligence and often associated with other problems mentioned in Chapter One.

Such children need the skills of experienced remedial teachers aware of each child's

specific learning difficulty and having the ability and knowledge to plan teaching programmes to take this into account. To recognize the child's difficulty and to communicate it to the child and his parents is also very important.

Almost 43% of the children did not receive any remedial treatment. Class teachers frequently complained that they had no time for extra tuition, although they agreed that some children were urgently in need of help. The visiting remedial teachers were in most cases wives of expatriate husbands who were on 2 to 4 year contracts. They volunteered to teach special remedial classes once or twice a week in some of the schools. The high turn-over of these teachers did not allow for the continuity which is required to establish a successful remedial programme.

3.2.5 Teachers' Estimates of Parental Interest

Teachers were asked whether parents were interested in their child's progress and behaviour and to comment on how parental interest was shown. The first two questions

on whether interest in progress and in behaviour was shown were rated as "very good", "good","fair" and "poor" (see Table 9). The answers to the third question on how parental interest was shown were quite varied and not easy to classify. Information was not provided in many cases.

TABLE 9

Teachers' Responses on Parental Interest

Responses	Dyslexic Group (35)
Responses on Interest in Progress	
Very good	3
Good	7
Fair	12
Poor	6
Unknown	7
Responses on Interest in Behaviour	
Very good	5
Good	4
Fair	11
Poor	6
Unknown	9
How Interest was Shown	
Frequent visits	2
Occasional visits	5
Co-operation	5
Over Anxiety	1
No visits	5
Unknown	17

Teachers' estimates of parental interest in progress showed that 10 parents were thought to be interested. Responses indicated that some interest was shown by the parents of 12 children. In 6 cases parents seemed to show very little or no interest in their child's progress.

In teachers' estimates of parental interest in behaviour a pattern of responses fairly similar to that of the previous question was found.

Comments on how parental interest was shown probably reflected teachers' attitudes more than the two previous questions did. Answers included comments on the frequency with which parents visited the school, on their willingness to co-operate and on their over anxiety.

These comments and the responses to the first two questions indicate that a considerable number of parents did not seem to show much interest in the progress or behaviour of their children. This was also a common complaint of many teachers in these schools.

Some parents seem to be unaware of the fact that children may become adversely affected in school progress and behaviour when they as parents show no interest. In such cases, lack of parental interest may affect reading and spelling difficulties.

Nevertheless, in 9 to 10 responses, parents showed a definite concern for their child's progress and behaviour. Under these circumstances, the reading and/or spelling difficulty cannot be ascribed to parental interest or lack of interest.

3.2.6 Teachers' Estimates of School Work

Estimates of school work in reading, spelling, writing, language, arithmetic, drawing, handwork and games were made by class teachers for the 35 dyslexic children. The teachers were asked to rate school work as "very good", "good", "average", "weak" and "very backward". Details of these results are given in Table 2, Appendix A.

Most of the dyslexic children were considered to be either "weak" or "very backward" in Reading comprehension and

vocabulary, in spelling, and in written expression and grammar. In arithmetic and handwriting 10 of the children were rated as "average" or "good". Half of the dyslexic group were rated as "average", "good" or "very good" in verbal expression. A majority of the children were considered as being "average", "good" or "very good" in drawing, handwork and games.

It is interesting to note that many of these children performed well in verbal expression, art, handwork and games. A number of children were also rated highly in arithmetic and handwriting, but were rated low or very weak in reading, spelling and written work. This is consistent with other research findings.

Class position was calculated at the end of each school term and was based on each child's academic achievement during the term. The children in the class were ranked according to their over-all performance in school work. Information from teachers' reports indicated that 27 of the dyslexic grou

were positioned in the lower third of their classes. No information was obtained about 8 children.

Data obtained from the "School Report" indicated that 10 of the dyslexic group were repeaters, 4 having repeated Standard II, 1 repeating Standard III and 5 repeating Standard IV.

Nineteen children had not repeated any class. No information was obtained in 6 cases.

3.2.7 Behaviour in School

Teachers were asked to record on a four-point scale the specific behavioural problems they had observed in dyslexic children including: co-operation in the classroom or on the playground, acceptance by peers, temperament, attention span, completion of class assignments and attitude toward teachers, children and school work. Teachers were asked to rate the behaviour of the children as "very good", "good", "fair or "poor". Details of these results are shown in Table 10.

TABLE 10

Behaviour in School: Presence and Degree of Specific Behavioural Problems (Teachers' Report).

Problems	Dyslexic Group (35)
Co-operation in the Classroom	
Very good	2
Good	14
Fair	15
Poor	4
Unknown	0
Co-operation in the Playground	
Very good	4
Good	21
Fair	10
Poor	0
Unknown	0
Social Acceptance by Peers	
Very good	4
Good	11
Fair	16
Poor	1
Unknown	3

Table 10 (continued)

Problems	Dyslexic Group (35)
Temperament	
Very good	1
Good	11
Fair	18
Poor	3
Unknown	2
Attention Span	
Very good	0
Good	3
Fair	13
Poor	15
Unknown	4
Completion of Class Assignments	
Very good	1
Good	2
Fair	5
Poor	25
Unknown	2

Table 10 (continued)

Problems	Dyslexic Group (35)
Attitude Towards Teachers	
Very good	6
Good	16
Fair	11
Poor	2
Unknown	0
Attitude Towards Older Children	
Very good	3
Good	13
Fair	16
Poor	2
Unknown	1
Attitude Towards Younger Children	
Very good	4
Good	12
Fair	14
Poor	1
Unknown	4
Attitude Towards School Work	
Very good	0
Good	2
Fair	14
Poor	19
Unknown	0

Most of the children were rated as "poor" in completing class assignments and in attitude towards school work. Attention span was also a major difficulty for many of the dyslexic children. These are some of the common behavioural symptoms that characterize dyslexia.

It appears from the teachers' reports that most of these children did not exhibit any major adjustment problems in relation to co-operation, social acceptance, temperament and attitude towards teachers and children, as many children were rated either "fair" or "good" on these items. Only 2 children were rated "poor" on a majority of the 11 behavioural items. However, there was no indication of severe emotional disturbance in any of these cases.

3.2.8 Emotional and Physical Status

The emotional status of each child was assessed by the teacher's response to the question "Describe any emotional symptoms or difficulties exhibited by this child that may indicate a severe emotional disturbance."

and by responses to the 11 behavioural items discussed in 3.2.7. No information was obtained for 10 children. Nineteen children were reported as behaving normally, and did not appear to be very different from other children. In 6 cases children were described as being nervous, easily upset and generally unsettled but there was no indication of any child being severely withdrawn, depressed, full of anxiety or hostile to other children. Nevertheless there were some signs of tension among the dyslexic group.

In the "School Report" under the heading "Bodily Characteristics" teachers were asked to respond to three questions related to physique, physical health and eye or ear defects.

In the first question teachers were asked to describe physique (compared with peers). Responses were varied. There was no indication of any gross abnormal physical development.

On the second question "Are there any indications of defects or ill health?" One child was reported to have had typhus when he was a baby; in another case a child had been involved in an accident (unspecified). Most of the responses were "No".

None of the dyslexic children had any difficulty with "seeing" or "hearing" according to teachers' reports. There was no indication that any child in the dyslexic group was suffering from any defect or ill health at the time of this research.

3.2.9 Teachers' Estimates of Intelligence

Estimates of intelligence on a five-point scale were made. Class teachers were asked to rate the children as "very bright", "bright", "average", "below average" and "dull". Details of the Standard Progressive Matrices (percentile groups) and the Goodenough - Harris 'Draw - A - Man Scale' (percentile rank) for each category of the teachers' estimates are given in Table 3, Appendix A.

A striking number of children were estimated as of below average or dull.

There were 13 children who performed at between the 25th. and the 50th. percentile or above on the Progressive Matrices and above the 25th. percentile on the Goodenough - Harris Scale, who were thought to be "below average" in intelligence. Four of these children performed at or above the 75th. percentile on the Progressive Matrices. Rated as "dull" were 4 children whose results on the two tests indicated average intelligence. It is important to note that underestimates of potential are likely to have an effect on teachers' expectations and on the management of children.

3.3 DISCUSSION

According to Harris (1957) some of the deficiencies characterising dyslexia begin to disappear in dyslexic children at about 9 to 11 years of age. He suggests that such children may also gradually grow out of much of their reading disability. This may be one reason for the apparent discrepancy between the number of 9 year old children (12) and 12 year old children (4) selected for this study.

Johnson and Myklebust (1967) described two forms of dyslexia based on differing symptomatology. They described the auditory dyslexic as having neat handwriting and reported that these children may also be good at games and handicrafts. Critchley (1970) reported that many dyslexics he knew excelled in similar activities. In this study the teachers' responses to estimates of school work indicated that a considerable number of the dyslexic children performed well in these same activities. Whether or not these children are auditory dyslexics is another area to be explored.

It is reported by Jordan (1972) that some dyslexic children exhibit brightness in oral language fluency in spite of their reading or spelling disability. In this study 9 children were reported to be either "very good" or "good" in verbal expression and 16 cases were regarded as "average". These results seem to be fairly consistent with Jordan's findings.

Naidoo (1972) reported that in Teachers' estimates of intelligence for 89 dyslexic boys, many boys were both over-estimated and under-estimated. In this study about half the dyslexic group were under-rated by their teachers. Both over-and under-estimates of potential must have an effect on expectations of the children and on their management.

CHAPTER 4

RESULTS: DIAGNOSTIC TESTING

4.1 INTELLIGENCE TESTS

The diagnostic tests administered to the 35 dyslexic children are described in Chapter Two and comprised those of intelligence, reading and spelling. This Chapter deals with the results of these tests.

Some caution must be exercised in interpreting the findings reported since the information obtained was not based on standardized norms for this particular population. The rationale for using tests constructed and standardized in other countries has been given in Chapter Two Section 2.3.3. For the four tests used in this section, British and American norms were employed for the respective tests, to obtain results. The findings of these tests must therefore be regarded as estimates of potential and attainment and should not be interpreted as statistically precise data.

4.1.1 The Standard Progressive Matrices Test.

The Standard Progressive Matrices Scale consists of certain fixed percentages of the population into which people are grouped according to their scores. In this way it is possible to classify a person according to the score he obtains as Grade I or "intellectually superior", if his score lies at or above the 95th. percentile for people of his age.
Grade II or "definitely above the average in intellectual capacity", if his score lies at or above the 75th percentile but below the 95th. percentile.
Grade III or "intellectually average," if his score lies between the 25th. and 75th. percentiles.
Grade IV or "definitely below average in intellectual capacity," if his score lies at or below the 25th. percentile.
Grade V or "intellectually defective," if his score lies at or below the 5th. percentile for his age.

Children were accepted for this study if they performed as "intellectually superior", or "definitely above the average in intellectual capacity" or "intellectually average" on the Matrices.

Special administrative procedures were used to ensure that the children understood the test and how to record their responses. These procedures have been fully described in Chapter Two, Section 2.3.3. The results of the Matrices are shown in Table 11.

Table 11

Standard Progressive Matrices: Percentile Groups or Grades for 35 Dyslexic Children in Relation to Chronological Age.

Progressive Matrices Percentile Group	Grade	Chronological Age 9yrs	10yrs	11yrs	12yrs	Total
95 and over	I	-	-	-	-	-
75 and below 94	II	3	3	1	-	7
50 and below 75	III+	5	3	5	2	15
Over 25 and under 50	III-	4	5	2	2	13
Total		12	11	8	4	35

From the table it can readily be noted that 20% of the dyslexic group had performed at Grade II and were therefore estimated to be definitely above average in intellectual capacity.

The remaining 80% were estimated to be of average intelligence, 43% having been rated as "high average" (at 50th. and below 75th. percentile), and 37% having been rated as "low average" (over 25th. and under 50th. percentile).

It is of interest to note that approximately 67% of the 9 year old children, 55% of the 10 year old children, 75% of the 11 year old children and 50% of the 12 year old children performed at or above the 50th. percentile on the Progressive Matrices.

4.1.2 The Goodenough - Harris Draw -A- Man Scale

In the Goodenough - Harris Test a good score depends on accurate observation and the development of concepts of the human figure and clothing. The presence or absence of 73 specific points was noted,

ranging from "head present", "legs present", to "sleeves and trousers non-transparent" and "apposition of thumb shown". Scores were converted into percentile rank to obtain an estimate of the child's intellectual level.

To be accepted in this study, the child had to perform at the 25th. percentile or above on the Goodenough - Harris Test.

Testing procedures based on the 1963 Test Manual revised by Harris were slightly altered. The children were asked to draw only one human figure - a man. In a few cases girls drew a woman figure which was considered acceptable for this study. Raw scores were converted to Standard Scores which were then converted to Percentile Ranks.

Table 12

Goodenough - Harris Draw -A- Man Scale: Percentile Rank for 35 Dyslexic Children in Relation to Chronological Age.

Goodenough - Harris Scale Percentile Rank	Chronological Age				
	9yrs.	10yrs.	11yrs.	12yrs.	Total
95 and over	1	1	-	-	2
75 to 94	3	-	-	1	4
50 to 74	4	5	3	1	13
25 to 49	4	5	5	2	16
Totals	12	11	8	4	35

The results showing percentile ranks for 35 dyslexic children were grouped into 4 categories as shown in Table 12. The results indicate that 17% of the dyslexic group performed at the 75th. percentile or above. In 83% of the cases percentile ranks from the 25th. to the 74th. percentile were obtained, with 37% of the cases ranging from the 50th. to 74th. percentiles and 46% of the cases ranging from the 25th. to 49th. percentiles.

Performance on the Goodenough - Harris Test in relation to chronological age was as follows: about 67% of 9 year old children, 55% of the 10 year old children, 38% of the 11 year old children and 50% of the 12 year old children ranked at or above the 50th percentile. It is not clear why the 11 year old children obtained considerably lower results on the Goodenough - Harris Test than on the Matrices Test.

4.1.3 Breakdown of Individual Results on the Matrices and Goodenough - Harris Test

While results on the Matrices and Goodenough - Harris Test cannot be directly compared

since they are based on tests standardized on different populations, it is of interest to note how each of the 35 dyslexic children performed on the two tests. Table 13 gives these details.

Table 13

Breakdown of Individual Results on the Standard Progressive Matrices (Percentile Grade) and the Goodenough - Harris Draw -A- Man Scale (Percentile Rank) for 35 Dyslexic Children.

Standard Progressive Matrices		Goodenough - Harris Scale (Percentile Rank)			
Percentile Group	Grade	25 to 74	75 to 94	95 and over	Totals
95 and over	I	-	-	-	-
75 and under 95	II	5	2	-	7
Over 25 and under 75	III	24	2	2	28
Totals		29	4	2	35

Two children who ranked at the 95th percentile or over on the Goodenough - Harris Test performed within Grade III (over the 25th. and under the 75th. percentile) on the Matrices. In five cases children who performed within Grade II (at the 75th. and under the 95th. percentile) on the Matrices ranked between the 25th. and the 75th. percentile on the Goodenough - Harris Test. There were 24 children who performed at or between the 25th. and 75th. percentile on both tests. Approximately 74% of the dyslexic group obtained results that came within corresponding categories or groupings in the two tests, (25th. to 74th. percentile and 75th. to 94th. percentile).

Variance of scores between and within categories or groupings could not be investigated in this study for obvious reasons.

Teachers' estimate of intelligence was discussed in Chapter Three (see Section 3.2.9). Details of the Progressive Matrices (percentile groups) and the Goodenough - Harris Test (percentile rank) for each category of the teachers' estimates are given in Table 3, Appendix A.

4.2 ATTAINMENT TESTS

The Reading Age and/or Spelling Age of all 35 dyslexic children were at least one year below Chronological Age. In normal cases, many children read and spell far in advance of their Chronological Age.

4.2.1 Results of Reading Age and Spelling Age

Table 14

Reading Age on "Schonell's Graded Word Reading Test " and Spelling Age on "Schonell's Graded Spelling Test A" (in months) in Relation to Chronological Age.

Chronological Age	Reading Age		Spelling Age	
	No. of chn.	Mean	No. of chn.	Mean
9 to 9 yrs. 11 mths.	10	87.6	12	85.2
10 to 10 yrs.11 mths.	11	85.2	11	80.4
11 to 11 yrs.11 mths.	7	92.4	8	87.6
12 to 12 yrs.11 mths.	4	87.6	4	81.6
Total number	32	88.1	35	83.7

One child was not retarded in reading and two children were retarded by less than one year. The Reading Age for the remaining 32 children was recorded in Table 14. All the 35 dyslexic children were retarded in spelling by more than one year; a Spelling Age was therefore recorded for each of the 35 dyslexic children.

The mean spelling ages are lower than the mean reading ages. However, it is common for reading skills to be in advance of spelling among junior school children (Naidoo, 1972). Tne children aged 12 were much more severely retarded in both reading and spelling than the 9 year old children. Both the mean reading ages and mean spelling ages for tne four age groups (9,10,11,12) indicate that the degree of retardation tends to increase with age.

4.2.2 Retardation in Reading

Table 15

Retarded in Reading (Word Recognition) in Relation to Chronological Age.

"Schonell's Graded Word Reading Test"

	Dyslexic Group
Not retarded	1
Retarded by 1 to 11 months	2
12 to 23 months	10
24 to 35 months	8
36 to 47 months	5
48 to 59 months	7
60 to 71 months	2
Total number of children	35

Forty percent of the dyslexic group were retarded in reading by 3 years to 5 years 11 months in relation to chronological age. Retardation by 1 year to 2 years 11 months was reported for 51% of the group.

4.2.3 Retardation in Spelling

Table 16

Retardation in Spelling in Relation to Chronological Age.

"Schonell's Graded Spelling Test"

	Dyslexic Group
Retarded by	
1 to 11 months	0
12 to 23 months	4
24 to 35 months	10
36 to 47 months	8
48 to 59 months	10
60 to 71 months	2
72 to 83 months	1
Total number of children	35

Sixty percent of the dyslexic group were retarded in spelling by 3 years to 6 years 11 months in relation to chronological age. Table 16 shows a retardation of 1 year to 2 years 11 months for 40% of the group.

4.3 DISCUSSION

The main purpose of administering intelligence tests in this study was to be able to obtain an estimate of potential which would ensure that the children in this sample were of at least average intelligence. No detailed qualitative analyses were made on children's individual responses to the test items.

Wober (1969) reported on a testing programme carried out among factory workers in Nigeria. The 'Matrices' was repeated by the same men after six months. There was no intervening coaching, and the test was given as though it was to be a new experience with full instructions repeated. He found that overall differences in retesting were significant and suggested that improvements were found particularly among the lower initial scorers. He suggested that one possible explanation as to why the high scorers did not improve as much as the low scorers was that low scorers would be more amenable to social stimuli, exhortation and the like and would therefore respond well to the favourable condition of individual testing.

The initial high scores would be less influenced on retest by social motivations, but would sustain the mean score by their higher level of analytic visual cognitive skills. Vernon (1967) noted similar findings in a research he carried out in East Africa.

These findings may well indicate that high scores on these intelligence tests are more accurate than low scores. Sixty-three percent of the dyslexic group in the present study performed at or above the 50th. percentile on the Progressive Matrices Test, while only 54% of the group scored at the 50th percentile or above on the Goodenough - Harris Test. This means that a fairly high percentage of the dyslexic group performed as "low average" in ability or between the 50th. and 25th. percentiles. Results for this proportion of the group may be less accurate than those attaining higher scores.

Hunkin (1950) found that difference in performance between Bantu and American children on the Goodenough Draw -A- Man Test was scarcely noticeable at the 5 and 6 year age level, but

it became considerably greater as chronological age increased. He suggested that environmental factors may be responsible for these differences.

In this study results on the Goodenough - Harris Test showed that the difference in performance between 9 year old Kenyan and American children was less than the difference for the 12 year old Kenyan and American children; however, this sample was too small to make valid statements about performance on the Goodenough - Harris Test in relation to chronological age.

CHAPTER 5

RESULTS: ANALYSIS OF SPECIFIC LANGUAGE/READING DIFFICULTIES - DYSLEXIA

5.1 SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

This chapter aims to clearly examine and analyse the results obtained on the 'Screening Test for Identifying children with Specific Language/Reading Disability', noting particularly the kinds of errors commonly made by the 35 children selected for this study.

Tables 4,5,6 and 7,8,9 in Appendix A provide detailed data on the performance of individual children on the Screening Test in relation to the types of errors manifested, indicating common areas of confusion; and the number of errors, noted as confusions, made on each of the subtests.

Results on the Screening Test are also analysed in relation to the 'Dyslexia Profile'

which consists of specific patterns of behavioural difficulties tending to characterise different forms of dyslexia (see Appendix D).

The identification of certain features characteristically associated with a specific reading and/or spelling disability and the establishment of the presence and severity of the learning difficulty are discussed.

5.1.1 Analysis of the Screening Test

The Screening Test is fully described in Chapter Two, Section 2.4.2, including procedures for administration and evaluation of performance on the subtests.

For the purposes of this study tne minimum number of errors required for the child to be considered as having a specific reading and/or spelling difficulty was 16 errors on subtests 2 to 7, providing these errors indicated consistent patterns of behavioural difficulties.

On the following pages is an example of a completed Summary Sheet for one child which clearly shows how each child's performance was evaluated. It can be noted that total 'Wrong' errors and errors showing 'Confusion' are combined under ANALYSIS to provide one negative score indicating general performance on the tests.

Each 'Wrong' counts as one negative point. Where an item consists of more than one word but is worth one point as a whole, it can count only as one wrong point even though its components may show more than one error. For example, 'blue barn' (Test 3, item 11) may be incorrectly recalled and written 'bule brand', but only one 'Wrong' would be scored under POINTS. However, the transposed letters in 'bule' and the transposed letters in 'brand' as well as the inserted 'd' would be noted as 3 errors and entered for ANALYSIS under Reversals, Transpositions, Inversions Etc.

EXAMPLE OF A COMPLETED SUMMARY SHEET

SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

SUMMARY

James Mwangi (Child's Name) 10½ (Age) 4 (Std.) Nairobi Primary School (School)

Test	Points: Total	Points: Right	Points: Wrong	Analysis Showing Confusion: Wrong	Reversals, Inversions & Transpositions etc.	Omissions	Self-Corrections	Incorrect Number, Letter & Geometric Forms	More Than One Item Marked	(X): Spatial Organisation	(X): Letter-size Relationship Penmanship-Kinesthetic	Comments
1. Copying-Chart	76	61	15	15	3	9	1	5			X	Omitted words Writing is poor
2. V.P.M.&V.Dis.	14	12	2	2	2							Recall, Trans.
3. V.P.M.-K.	12	4	8	8	6	3	2	3		X		Inver., Omissions Subst. Recall
4. A.with V.K. Ass'n												
Letters	5	2	3	3	3			1				Recall. Subst.
Numbers	6	6	0	0								
Spelling	25	10	15	15	8	3	2	7			X	Subst. Recall. Poor writing
5. A.Dis withV.K.	40	23	17	17	7		4	15			X	A. Dis.
6. A.with V.Ass'n	14	8	6	6	4	1						Recall, A-V Assn
7. Orientation	5	5	0	0	4	3	1					Subst., Trans.
TOTAL 121	121	70	51	51	34	10	9	26				

Ecolalia + Sequence Poor

51 — Total errors (Wrongs)

51 + 79 = 130 — Total errors and confusions

A. + V. perception and memory problem with dysgraphia

EXAMPLE OF A COMPLETED SUMMARY SHEET (CONTINUED)

SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

SUMMARY

Name A boy Birthdate 26-2-66

Age 10.5 Date of Screening Aug. 4, 1976

School Nairobi Primary Teacher Mrs. X

Standard 4 Standard (s) Repeated 1 yr. in Std. II

Intelligence Tests:

1. Standard Progressive Matrices Near 90%ile, II
   %ile Group/Grade
2. Goodenough-Harris Draw-A-Man 58
   %ile Rank

Attainment Tests:

1. Schonell's Graded Word Reading Test 7.8
   Reading Age
2. Schonell's Graded Spelling Test 6.4
   Spelling Age

Handedness R____ L X Both____

Comments

Signature of Evaluator

Date

This study's main interest is to examine and analyse the types of confusions made on the Screening Test indicative of a specific language difficulty. Since not all 'Wrong' errors can be labelled as errors showing 'Confusion' and since many errors of 'Confusions' cannot be counted as 'Wrong' errors it was considered feasible to separate the section 'Total errors and Confusions' under ANALYSIS into 'Wrong' errors and 'Confusion' errors, so that the Errors Showing Confusion can be properly analysed. This method has been employed for Section 5.1.2 and 5.1.3.

'Confusions' as used here refers to the errors made on the subtests which are indicative of behavioural difficulties common to the dyslexic child. 'Wrongs' indicate the errors made against the points listed alongside each subtest on the Summary Sheet.

5.1.2 Analysis Showing Areas of Confusion

In the 'Example of a Completed Summary Sheet' (see 5.1.1) under Analysis Showing

Confusion are 5 categories of confusions indicating the common types of errors exhibited by children who have specific reading and/or spelling difficulties. These categories include: Reversals and Transpositions etc.; Omissions; Self-corrections; Incorrect number, letter and geometric forms; and More than one item marked. General Weaknesses in spatial organization and letter size relationship are indicated with an 'X'.

Description of Categories Showing Confusion.

Reversals, Transpositions etc - Several types of errors are grouped under this heading as follows:

Reversals - When letters and numbers are reversed as 'b' for 'd' and 'p 26' for '9 26'.

Transpositions - When letters or numbers are misplaced with a word e.g. 'prehaps' for 'perhaps', or numbers e.g. '45' for '54'.

Inversions - When up and down confusion is apparent as in 'w' for 'm'; 'g' for 'd'.

Insertions - When an extra letter is inserted e.g. 'fruitfless' for 'fruitless'.

Substitution - When a letter in a word is substituted for another e.g. 'big' for 'beg'.

These confusions are reflected in left-to-right and up-and-down orientation and incorrect sequencing of letters, words and numbers indicating directional confusion. Letters and syllables within words are confused because of faulty Visual or Auditory perceptual recall function,or both.

Omissions - These include omitted or incomplete items and are indications of faulty Visual or Auditory perception or memory or both.

Self corrections - These are noted as confusions, each self-correction counting as one point for ANALYSIS. Each unsuccessful attempt at self corrections is also recorded as a confusion. If one or

more attempts are made on an item this indicates poor or uncertain recall which may be due to a Visual or Auditory difficulty.

Incorrect Numbers, Letters and Geometric Forms - This includes lack of consistency of script, capital and lowercase confusions and incorrect recall of geometric forms. Although a child may recall the words or components of letter and number sequences, he may have an insecure memory of the 'feel' of the form. He may therefor mix manuscript and cursive writing, even in one sequence of letters. Again, though recall itself may not be faulty, an inability to match the correct form Kinesthetically may lead to the use of capital instead of lowercase and vice versa.

More Than One Item Marked - This indicates that if a child marked more than one item in a row of items (e.g. Test 2), he may be unable to discriminate between close configurations.

Weaknesses ('X') - Poor spatial organization may indicate inadequate Kinesthetic - Motor Development. Poor quality of letter forms, including uniformity of size and spacing, indicates a weakness in Kinesthetic memory of sequential movement patterns. Faulty recall of Visual patterns may also be the cause for poor quality letter formations. Slowness in copying often indicates poor Visual perception or recall.

Results of Analysis

The results of the analysis showing confusion are tabulated in Table 17. These results clearly indicate that the category - Reversals, Transpositions etc. is the most common area of difficulty experienced by the 35 children. Approximately 55%, 46%, 55% and 60% of the total errors showing confusion fall into this category of errors for the 9, 10, 11 and 12 year old children respectively.

No child indicated having difficulty in the area -"More than one item marked".

For the remaining three categories showing confusion the number of errors made varied with age as follows:

Omissions - 11% for children aged 9; 14% for children aged 10; 14% for children aged 11 and 15% for children aged 12.

Self-corrections - 9% for children aged 9; 15% for children aged 10; 13% for children aged 11 and 16% for children aged 12.

Incorrect Number, Letter and Geometric Forms - 25% for children aged 9; 26% for children aged 10; 18% for children aged 11 and 10% for children aged 12.

Table 17

"Screening Test for Identifying Children With Specific Language/Reading Disability":

Analysis Showing Confusion in Relation to Chronological Age.

	Number of Errors Showing Confusion									
Chronological Age:	9 years		10 years		11 years		12 years		TOTAL	
	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean
Reversals, Transpositions, Inversions etc.	12	28.5	11	29.0	8	26.1	4	35.8	35	29.9
Omissions	12	5.8	11	8.9	8	6.5	4	8.8	35	7.5
Self Corrections	12	4.9	11	9.3	8	6.0	4	9.3	35	7.3
Incorrect Number, Letter & Geometric Forms	12	12.9	11	16.5	8	8.5	4	5.8	35	10.9
More Than One Item Marked	12	0	11	0	8	0	4	0	35	0
Total mean number of Confusions		52.1		63.7		47.1		59.7		55.6

From these findings there are indications that as dyslexic children grow older they tend to make more errors in the areas of omissions and self-corrections, finding these areas increasingly more difficult to cope with. The problem of self-corrections increasing with age, may imply that the older child becomes more conscious of his mistakes and hence makes more attempts at correcting uncertain items than the younger child.

Results for confusions showing incorrect number and letter forms show a considerable decrease with age in the number of errors made. One reason for this may be that older children tend to become more aware of capital and lower-case confusions as well as mixed cursive and manuscript writing and therefore make fewer errors than 9 and 10 year old children.

Tables 4, 5 and 6 in Appendix A show the individual results for 35 children, of the five areas showing confusion, obtained from the Summary Sheet prepared for each child (see sample in Section 5.1.1). In addition, 'Weaknesses', indicated by an ('X') are recorded

in order to get a true perspective of the child's difficulties.

A few salient points obtained from the results recorded in these Tables are referred to below:

Individual results reveal that the number of errors made in the area of reversals, transpositions etc. varies from 17 to 53 and this applies to all ages. Half the 9 year old children and a majority of the children aged 10 made 10 to 28 errors on incorrect number and letter forms while six of the children aged 11 and all of the 12 year old children made fewer than 10 errors in this area of confusion.

Only a sixth of the 9 year old children made 10 or more errors in self-corrections while half the children aged 10, a fourth of the children aged 11 and half of the 12 year old children made 10 or more errors in this area.

Individual results showing the number of errors for omissions indicate that the level of difficulty for omissions is similar to that of self-corrections, this applying to all the age groups.

In all, 14 children exhibited weaknesses in poor letter formations and/or in Kinesthetic memory of sequential movement patterns which are suggestive of the difficulty labelled dysgraphia. Most of these children rated among those who exhibited a total of 65 or more errors showing confusion.

The two most problematic areas of confusion associated with these weaknesses were reversals, transpositions etc. and incorrect number and letter forms for the 9, 10 and 11 year old children. The number of errors made on omissions and self-corrections varied within these ages.

For the two children aged 12, the area - "Reversals, transpositions etc." (51%, 56%) was followed by the area of self-corrections (24%, 23%) respectively.

Most of these children may well be suffering from mild to severe cases of Auditory and/or Visual perceptual memory function problems as well as dysgraphia.

5.1.3 Analysis of Performance on Each of the Subtests.

In this section an attempt was made to analyse the number of errors showing confusion which were made on each of the subtests, in relation to chronological age. Types of confusions made on each of the subtests were also studied.

According to Slingerland (1974) a divergence between 'Wrong' errors and 'Confusion' errors is highly indicative of a specific language/ reading disability. For this reason discrepancies between 'Wrongs' and 'Confusions' are analysed in the latter part of this section.

Seven of the subtests which are represented on the sample Summary Sheet (see 5.1.1.) include: three tests using a visual stimulus - Copying from a chart, Visual Perception - Memory with Visual Discrimination, and Visual Perception - Memory with Kinesthetic - Motor Response; and four tests using an Auditory stimulus - Auditory Perception - Memory with Visual Kinesthetic - Motor Association, Auditory Discrimination with Visual - Kinesthetic Linkage, Auditory Perception - Memory with Visual Association, and Orientation.

The eighth subtest - Ecolalia and Auditory Sequential Memory was analysed separately because of the nature of the test. Results were translated into four categories: 'very good', 'good', 'fair' and 'poor' for a quick appraisal of performance (see Table 19). In this test Auditory memory was checked.

These tests have been fully described in Chapter Two, Section 2.4.2. The number of points for seven of the subtests are listed in Table 18. In Appendix D are details of the items on each of the 8 subtests.

On most of the subtests each numbered item is worth one point (for 'Wrongs' only). Exceptions are: Subtest 4, item 9 which is worth 3 points, one point for each set of numbers; and item 10 which is worth 5 points, one point for each word in the sentence. The 5 points for item 10 belong to the Spelling section. Subtest 7 had 3 items worth 5 points, item 1 worth one point; items 2 and 3 each worth two points.

Results of Analysis Showing Confusion

Table 18 gives the mean number of errors showing confusion on each of the subtests in relation to chronological age. The errors for Test One, 'Copying from a Chart', were not included in the totals for the remaining subtests (2 to 7) but served as a basis of comparison with them. The results for Test 8 also served as a basis of comparison with the other subtests.

Table 18

"Screening Test for Identifying Children with Specific Language/Reading Disability":

Number of Errors Showing Confusion on Each of the Subtests in Relation to Chronological Age

		Number of Errors Showing Confusion									
		9 Years		10 Years		11 Years		12 Years		Total	
Subtests	Points	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean	No.chn.	Mean
1. Copying - Chart	76	10	12.4	11	14.5	7	12.3	4	10.0	32	12.3
2. V.P.M. & V.Dis.	14	12	2.4	11	2.5	8	2.9	4	2.8	35	2.6
3. V.P.M. - K.	12	12	8.8	11	10.0	8	7.9	4	8.3	35	8.8
4. A. with V.K. Ass'n.											
Letters	5	12	6.3	11	5.9	8	4.7	4	5.3	35	5.5
Numbers	6	12	1.6	11	1.5	8	1.4	4	1.8	35	1.6
Spelling	25	12	12.7	11	17.0	8	11.4	4	17.3	35	14.6
5. A. Dis. with V.K.	40	12	11.8	11	16.5	8	10.4	4	9.7	35	12.1
6. A. with V. Ass'n.	14	12	3.8	11	4.6	8	2.9	4	6.0	35	4.3
7. Orientation	5	12	4.7	11	5.7	8	5.5	4	8.5	35	6.1
Total	121		52.1		63.7		47.1		59.7		55.6

Table 19

Subtest 8 - Ecolalia and Auditory Sequential Memory: Analysis of Performance for 35 Dyslexic Children.

Items	Dyslexic Children
Phrases (6)	
Very good	5
Good	14
Fair	9
Poor	7
Sentences (2)	
Very good	7
Good	8
Fair	13
Poor	7
Series of Digits (2)	
Very good	11
Good	11
Fair	8
Poor	5
Total number of Children	35

The results in Table 18 indicate that the average number of errors showing confusion on Test One - 'Copying from a Chart' was 12.3 which is 16% of the total points (76) ascribed to Test One. This implies that for many of the 35 children, copying from a sample was not a very difficult task. However, it must be remembered that these children were not penalized by a limiting time factor.

The tests in which the greatest number of errors occurred for all age groups (9,10,11, 12) were Test 4, Spelling, (24%,27%,24%,29%) and Test 5, Discrimination and perception of initial and final sounds including consonant blends, (23%, 26%,22%,16%). All 35 children had a spelling age of one or more years below chronological age, with a majority of the group being retarded by more than three years. Poor discrimination and perception of sounds also affect spelling achievement.

Table 20 provides information on the types of errors showing confusion which were made on each of the subtests by the 35 children. The different types of confusions are rated from the most common to the least under each subtest.

Table 20

"Screening Test for Identifying Children With Specific Language/Reading Disability": Types of Errors Showing Confusion made on Each of the Subtests by 35 Dyslexic Children, Listed in Order of Prevalence.

Subtests	Types of Confusion in Order of Prevalence
1. Copying - Chart	Omissions
	Incorrect Letter Forms
	self Corrections
	Reversals, Transpositions etc.
2. V.P.M. & V.Dis.	Reversals, Transpositions etc.
	Self Corrections
3. V.P.M. - K.	Reversals, Transpositions etc.
	Omissions
	Incorrect Number, Letter Forms
	Self Corrections
4. A. with V.K.Ass'n: Letters	Reversals, Transpositions etc.
	Incorrect Letter Forms
	Self Corrections
	Omissions

Table 20 (Continued)

Subtests		Types of Confusion in Order of Prevalence
4.A. with V.K.Ass'n:		
	Numbers -	Reversals, Transpositions etc.
		Self Corrections
		Incorrect Number Forms
		Omissions
	Spelling	Reversals, Transpositions etc.
		Incorrect Letter Forms
		Omissions
		Self Corrections
5.A. Dis with V.K.		Reversals, Transpositions etc.
		Incorrect Letter Forms
		Self Corrections
6.A. with V. Ass'n		Reversals, Transpositions etc.
		Omissions
		Self Corrections
7.Orientation		Reversals, Transpositions etc.
		Omissions
		Incorrect Number, Letter Forms
		Self Corrections.

In Test 4, Auditory Perception - Memory with Visual Kinesthetic Association - 'Spelling' and Test 5, Auditory Discrimination with Visual Kinesthetic Linkage, the most common areas of difficulty experienced were: Reversals, transpositions, and substitutions, followed by incorrect letter forms. These difficulties may indicate faulty Auditory perception and/or recall, poor Auditory discrimination, or directional confusion.

The remaining percentages showing mean errors of confusion on each of the subtests are as follows. On Test 2 there was very little deviation from the average of 5% errors, for all the age groups. Types of confusions noted were reversals, transpositions and substitutions which indicate either lack of recall or difficulty in visual perception and directional confusion.

Results on Test 3, Visual Perception - Memory with Kinesthetic Motor Response, revealed a fairly high percentage of errors for all the age groups: 17% for 9 and 11 years olds, 16% for children aged 10 and 14% for children aged 12. The most common types of errors made on this subtest are shown in Table 20. These errors are

indications of faulty Visual perception and/or memory, and a certain degree of dysgraphia for those children who performed poorly on Test One in relation to poor letter formations.

Results on Test 4, Auditory Perception Memory with Visual Kinesthetic Association - 'Letters', show an average of 10% errors made, which is a fairly consistent figure for all the age groups. This indicates that many of tne children had considerable difficulty with this part of Test 4. Reversals, inversions, substitutions, and insertions were common errors made. These suggest faulty Auditory perception or memory and directional confusion. Many of the children also had difficulty with letter forms,mixing capitals and lowercase letters. This may be due to the stress of integrating the modalities - Auditory , Visual and Kinesthetic. Most of the children performed reasonably well on the 'Number' items in Test 4.

Results on Test 6, Auditory Perception Memory witn Visual Association indicate that 12 year old children had greater difficulty with the items on this test than did the other

age groups (7%, 7%, 6%, 10% for ages 9 to 12 respectively). Errors on this test may result from faulty Auditory perception or poor Visual perception and directional confusion.

Test 7, Orientation, consists of three items in wnich all sensory channels, Auditory - Visual - Kinesthetic, must be associated for successful performance. Again, the 12 year old children had considerable difficulty with these items, results indicating 14% of total mean errors. The 9, 10 and 11 year old children also exhibited some difficulties (9%, 9% and 12% mean number of errors respectively). Types of errors commonly made included reversals, transpositions, substitutions, sequencing and omissions. These may indicate directional confusion or faulty Auditory perceptual memory function. Spelling errors may be due to failure to recall how words look and sound or failure to recall the sequences of sounds in words.

One can conclude from these findings that a definite consistency or pattern of behavioural difficulties has emerged wnich is indicative of a specific language/reading disability.

The types of errors showing confusion are common to all 35 dyslexic children and these same errors tend to persist within the different subtests.

Table 7, 8 and 9 in Appendix A give the individual results for 35 children of the number of errors showing confusion which were made on each of the subtests by the 9, 10, 11 and 12 year old children respectively.

Results for Test 8-'Ecolalia and Auditory Sequential Memory' were included to give a broader perspective of the child's difficulty.

Discrepancy between 'Wrong' errors and 'Confusion' errors

Some children's performances show very few confusions although there are outright errors. Other children make errors that show specific confusions or many confusions of various kinds. A wide divergence between 'Wrong' errors and 'Confusion' errors can be highly significant of Specific Language Disability, especially when

such children are normal in all other ways (Slingerland, 1974).

In Table 21 are the results showing the mean number of 'Wrong' errors and the mean number of 'Confusion' errors made by 35 dyslexic children on each of the subtests. The mean number of 'Confusions' were greater than the mean number of 'Wrongs' on all the subtests with the exception of Test 5 where the results showed that outright wrongs exceeded the number of confusions.

Table 21

"Screening Test for Identifying Children with Specific Language/Reading Disability": Number of Errors ('Wrongs') and Number of Errors ('Confusions') on Each of the 7 Subtests.

Subtests		'Wrongs'		'Confusions'	
	Points	No.chn.	Mean	No.chn.	Mean
1. Copying - Chart	76	32	11.1	32	12.3
2. V.P.M. & V. Dis.	14	35	2.4	35	2.6
3. V.P.M. - K.	12	35	6.3	35	8.8
4. A. with V.K.Ass'n.					
Letters	5	35	2.7	35	5.5
Numbers	6	35	1.1	35	1.6
Spelling	25	35	11.9	35	14.6
5. A.Dis. with V.K.	40	35	12.9	35	12.1
6. A.with V. Ass'n.	14	35	4.1	35	4.3
7. Orientation	5	35	1.6	35	6.1
Total	121		43.0		55.6

The results indicate that there were very slight differences between 'Wrongs' and 'Confusions' on Test 1, 2, 4 - 'Numbers', 5 and 6. Discrepancies between 'Wrongs' and 'Confusions' were fairly large in Test 3 (6.3; 8.8), Test 4 - 'Letters' (2.7; 5.5) and 'Spelling' (11.9; 14.6), and Test 7 (1.6; 6.1). The difference between total mean 'Wrongs' and total mean 'Confusions' was 12.6 errors.

Table 22 indicates the direction and size of the discrepancy between 'Wrongs' and 'Confusions' for 35 dyslexic children. 'Wrong' errors were slightly greater than 'Confusions' in four cases. Performance scores indicate that a discrepancy of 20 points or more occurred for 11 dyslexic children, 'Confusions' being greater than 'Wrongs'. These cases may suggest a pronounced or severe degree of dyslexia.

When total 'Wrongs' are compared with 'Total errors and confusions' the divergence becomes even greater, (see Sample Summary Sheet in Section 5.1.1.).

Table 22

"Screening Test for Identifying Children with Specific Language/Reading Disability": Direction and Size of Discrepancy Between Number of 'Wrongs' and Number of 'Confusions' for 35 Dyslexic Children.

Discrepancy	Dyslexic Group
'Wrongs' greater than 'Confusions'	
Number of 'Wrongs'	
1 - 9	4
'Confusions' greater than 'Wrongs'	
Number of 'Confusions'	
1 - 9	12
10 - 19	9
20 - 29	8
30 - 39	1
40+	2
Total Number	35

5.1.4 Analysis of Performance in Relation to Intelligence and Achievement

A child with an average to high intelligence level whose achievement in the language area is not commensurate with his intelligence can be suspected of having dyslexia, especially when his achievement in other areas and his ability to grasp concepts is higher (Slingerland, 1974).

Highly intelligent children can be expected to achieve well above age level and average children at or above age level. When achievement falls below expectations, disability can account for inadequate performance when related to the Screening Test results.

If the errors reach or exceed the 'break-off' point (16 errors), and the intelligence level indicates average or above average ability, then disability is probably indicated.

Table 10 in Appendix A provides data of performance on the Screening Test for 35 children in relation to intelligence and achievement.

When evaluating a child's performance on the Screening Test the normal procedure is to combine 'Total errors and confusions' under ANALYSIS to get one negative score as is shown in the Sample Summary Sheet in Section 5.1.1. It is this score which was recorded in Table 10 under 'Total Errors and Confusions' to indicate performance. Results from Schonell's Graded Reading and Spelling Tests were used to relate achievement to performance on the Screening Test and percentile groupings from the Progressive Matrices were employed to indicate the level of intelligence.

Results from these data suggest that children who were considerably or very retarded in achievement also tended to make high performance scores on the Screening Test, indicative of a severe language/reading disability.

Many children who were very retarded in Reading and Spelling and obtained high scores on the Screening Test, rated as 'bright' or 'high average' on the Matrices Test. This may imply that the performance score on the Screening Test was not affected by the intelligence level for this group of children.

5.2 THE DYSLEXIA PROFILE: FORMS OF DYSLEXIA

The 'Dyslexia Profile' was adapted from Jordan's 'Written Screening Test' (1972). It is included in Appendix D because all the data used to compile it originated from information on the 'Screening Test for Identifying Children With Specific Language/ Reading Disability'.

The 'Profile' consists of lists of behavioural symptoms characterising three forms of dyslexia: Visual Dyslexia, Auditory Dyslexia and Dysgraphia.

For the purpose of this study the 'Profile' was used to analyse: the kind/kinds of dyslexia exhibited by each child; the behavioural difficulties characterising each form of dyslexia; and degrees of the severity of dyslexia. The three forms of dyslexia have been fully described in Chapter Two (Section 2.4.3).

The identification of differing patterns of disability among dyslexic children is of crucial importance to the planning of remedial education. Jordan (1972) states that normally, only one disability can be corrected at a time. Corrective teaching

must provide clearly structured sequences which involve one basic skill at a time.

5.2.1 Different Patterns of Dyslexia

It would be misleading to suggest that dyslexics fall neatly into one of the three categories described in the 'Dyslexia Profile'. According to Jordan, (1972) Visual dyslexia is often accompanied by Auditory dyslexia. He also maintains that the most prevalent forms of dyslexic handicap is that of Visual dyslexia. Table 23 gives an account of the various patterns of dyslexia exhibited by each of the 35 dyslexic children.

Table 23

Dyslexia Profile: Different Patterns of Dyslexia Exhibited by the Dyslexic Group.

Patterns of Dyslexia	Dyslexic Group
Visual Dyslexia	2
Auditory Dyslexia	0
Dysgraphia	0
Visual and Auditory Dyslexia	16
Visual Dyslexia and Dysgraphia	3
Visual and Auditory Dyslexia and Dysgraphia	14
Total number of children	35

These findings confirm the report made by Jordan above. All 35 children seemed to exhibit some, and in some cases, all of the behavioural difficulties ascribed to the Visual Dyslexic. In 30 cases Visual Dyslexia was accompanied by Auditory Dyslexia. Fourteen children indicated having difficulties in all tnree categories of dyslexia. However, experiencing difficulties in three categories does not necessarily indicate a high degree of severity of dyslexia.

5.2.2. Behavioural Difficulties Characterising Each Form of Dyslexia

Nine items of behavioural difficulties were listed under each category of dyslexia in the 'Dyslexia Profile' characterising: Visual Dyslexia, Auditory Dyslexia and Dysgraphia.

'Confusion' errors on the "Screening Test for Identifying Children With Specific Language/ Reading Disability" were carefully analysed, and if the same 'confusion' recurred several times and on different subtests, it was then transferred to the corresponding behavioural difficulty listed

in the 'Dyslexia Profile'. When the child manifested difficulty on three or more items in one of the three categories on the 'Profile' he was labelled as dyslexic. For example, if a child exhibited difficulty on three or more items under 'Visual Dyslexia' he was considered to be a Visual Dyslexic.

Tables 24, 25 and 26 give results of the frequency of behavioural difficulties characterising Visual Dyslexia, Auditory Dyslexia and Dysgraphia respectively, as exhibited by the 35 dyslexic children.

Each of the nine behavioural items describing tne Visual Dyslexic showed a frequency of at least 57%, with 'substitutions' indicating a high frequency of 88% and inversions, transpositions, omissions and insertions 80% each.

The most prevalent problem experienced by the Auditory Dyslexic was 'sound blending' with a frequency of 83%. Most of the items in this category had frequency ratings of between 45 to 65%. Only 2 children asked the administrator to repeat dictated items. This may be because of

the way in which the 'Screening Test' was administered. In the subtests requiring dictation the administrator repeated the item twice and then asked the child to complete the answer.

The 17 children described as 'dysgraphic' had the greatest difficulty in copying accurately, indicated by a high frequency of 88%. Other errors which 82% of the children made were omissions, insertions and recall of correct letter and number forms.

It is of interest to note how these results correspond with those mentioned by class teachers for the same group of children (see Chapter 3.1.1, Table 3). Teachers' reports showed a frequency of 72% on the behavioural items of insertions and omissions compared with 80% for the same items on the 'Profile'. Teachers rated 57% of the children as exhibiting difficulty in visual sequence and order compared with 60% on the 'Profile'. 57% of the children had difficulty in learning sounds, according to their teachers, compared with 66% who exhibited problems in sound discrimination and 83% in sound blending on the 'Profile'.

Table 24

Dyslexia Profile: Frequency of Behavioural Difficulties Characterising 'Visual Dyslexia', Exhibited by 35 Children.

Visual Dyslexia	
Behavioural Difficulties	Frequency
Inversions	28
Transpositions	28
Reversals	20
Endings of words left off	21
Substitutions	31
Omissions	29
Insertions	27
Incorrect recall of sequence in letters and numbers	21
Incorrect recall of sequence in days and months	20

Table 25

Dyslexia Profile: Frequency of Benavioural Difficulties Characterising 'Auditory Dyslexia', Exhibited by 30 Children.

	Auditory Dyslexia
Benavioural Difficulties	Frequency
Poor discrimination of sounds	20
Inability to detect syllables	23
Incorrect sound blending	25
Inability to apply phonic rules	14
Garbled pronunciation	13
Words phonetically written	8
Repetition of dictated words	2
Subvocalizing	14
Self corrections	13
Reproduction of a sequence of sounds	16

Table 26

Dyslexia Profile: Frequency of Behavioural Difficulties Characterising 'Dysgraphia', Exhibited by 17 Children.

Behavioural Difficulties	Dysgraphia Frequency
Inversions (written)	5
Faulty recall of correct forms of symbols	14
Distortation of letters or numbers	7
Illegible writing	5
Wrong writing motions	6
Copying inaccurately	15
Inability to make simple shapes	8
Omissions (written)	14
Insertions (written)	14

There was a large discrepancy on the item: 'garbled pronunciation'. Teachers' ratings showed that 91% of the children had problems in pronunciation compared with 43% on the 'Profile'. Apparently, many teachers did not discriminate between 'garbled pronunciation' and the normal problems associated with pronouncing unfamiliar words.

According to these results teachers tend to under-rate pupils on behavioural difficulties characterising dyslexia. However, there is indication of a moderate degree of consistency between teachers' ratings and results on the 'Screening Test'.

5.2.3 Continuum of Degrees of Dyslexia

It is a well established fact that dyslexic groups present a continuum of degrees of specific language/reading disability. Degrees of the severity of dyslexia were established in this study by rating the children on a four-point scale: 'none', 'moderate', 'pronounced', and 'severe' in relation to each of the three categories of dyslexia.

If the child exhibited difficulties in less than three items in any of the categories, he was rated as 'none' dyslexic. If the child manifested problems in most of or all the items in a category, his case was rated as either 'pronounced'or'severe' depending on his overall performance on the Screening Test.

Table 27 provides the data showing a continuum of degrees of dyslexia exhibited by the dyslexic group. All the 35 children were labelled as Visual Dyslexics. 77% of these children were rated as "pronounced" or 'severely' dyslexic. Of the 30 children labelled as Auditory Dyslexics 57% were rated as 'pronounced' or 'severely' retarded with a specific reading and/or spelling disability. Most of the children labelled as 'Dysgraphics' were considered as 'moderately' dyslexic.

Table 27

Dyslexia Profile: Continuum of Degrees of Dyslexia Exhibited by the Dyslexic Group.

Degrees of Dyslexia	Dyslexic Group (35)
Visual Dyslexia	
Severe	6
Pronounced	21
Moderate	8
None	0
Auditory Dyslexia	
Severe	1
Pronounced	16
Moderate	13
None	5
Dysgraphia	
Severe	0
Pronounced	1
Moderate	16
None	18

Naidoo (1972) found that both the severely and moderately dyslexic children exhibited similar features characterising dyslexia. The results in this study are consistent with those of Naidoo. One may therefore conclude that these children's difficulties are of a similar nature.

5.3 DISCUSSION

Naidoo (1972) explored the possibility that different varieties of dyslexia could be recognized by different patterns of disability. She found that none of the patterns of disability were confined to any one group but some disabilities occurred frequently in all the sub-groups, particularly the Sequencing Ability (of the WISC). She concluded that a sequencing disability may underlie or in some way cause the reading and spelling retardation. This is supported by Doehring's (1968) conclusion that a disturbance of sequential organisation lies at the root of specific reading difficulties. Results in this study also support this concept. All 35 children experienced difficulties characterised by transpositions, insertions,omissions, substitutions and sound blending, all of which are indicative of a sequencing disability.

There is no evidence in this study to support the notion that Visual Dyslexic Children are poor at games, or that Auditory Dyslexics are good at games and handicrafts as described by Johnson and Myklebust (1967). All the 35

children in this study were described as Visual Dyslexics and 30 children as Auditory Dyslexics. Most of them were rated 'fair', 'good' or 'very good' in games, art and handicrafts by their class teachers.

Vernon (1970) cites investigations made by Crosly and Liston, who found tnat the most common cause of dyslexia was impaired visual perception. These children showed the classical symptoms of dyslexia: reversal of letters and of words, and even complete mirror writing; or the order of letters in words was confused. The deficiencies were associated with 'directional confusion' and sequential ordering.

Vernon (1970) postulated that the most important factors contributing to backwardness in reading in 9 to 10 year olds were closely associated with audio-visual integration, orientation and left-right discrimination. Similar findings were reported in this study.

Newton (1970) reported a high percentage of left-handed or ambidextrous subjects in her study of 50 dyslexic children. Only one child was left-handed in the present research. Ambidexterity was not observed.

The major cause of dyslexia is considered by many researchers to be some form of retarded development, or 'maturational lag' (Critchley, 1970; Miles, 1974). That retarded maturation may be rather general, and not restricted to the cognitive processes alone, was suggested by De Hirsh's study (De Hirsh et al. 1966). They gave a variety of tests to children of about six years of age, before they began learning to read, and followed up their progress in learning to read, testing achievement one and two years later. It was then found that children who failed to learn easily, showed at their initial testing many deficiences including incapacity for visual and auditory analysis and resynthesis, directional confusion and reversals; poor motor control, but no excess of ambilaterality. Such children at the age of 11 to 15 years were still deficient in visual and auditory analysis. About half of them became fairly adequate readers, but their writing was illegible and their spelling very bad. The maturational deficit seemed to be prolonged in its effect. The results in the present study tend to show

similarities to those described by De Hirsh, and may be suggestive of a 'maturational lag' as the underlying cause of dyslexia. Results also indicate that behavioural patterns change with advancing age. More research about tne nature of dyslexia in Kenyan children is required to clarify this issue.

CHAPTER 6

INCIDENCE OF DYSLEXIA

6.1 RESULTS

In the "Initial Classroom Screening" stage teachers were asked to refer any child who seemed to exhibit behavioural symptoms characterising dyslexia. It was assumed that most of the children with dyslexic tendencies would be referred by teachers and that prevalence could be based on this assumption.

The definition of dyslexia as used in this research called for a set of stringent criteria. On the basis of these criteria 116 children were excluded from the study.

Results obtained from this investigation indicate that out of a total population of 1,862 Kenyan African children aged 6 to 12 years 11 months and attending Standard IV to Standard VI classes in the eight Nairobi City Council "High Cost" Schools only 35 children were designated as being dyslexic. This means that

about two percent of the population investigated was considered to be dyslexic.

Certain factors relating to the criteria used in this research may have produced too low an estimate of the real incidence of dyslexia within the population. Low results on the intelligence tests excluded 83 children from the study. This may well indicate that the intelligence tests used in this study were not sufficiently reliable to give an accurate estimate of intellectual capacity, especially for those children whose performance was low on the tests. The criterion for intelligence may also have been too rigid in that the results for BOTH the "Progressive Matrices" and the "Goodenough - Harris Drawing Test" had to indicate at least average ability for any child to be accepted in the study. Therefore our estimate (2%) for incidence of dyslexia may well err on the conservative side.

6.2 DISCUSSION

There has been considerable disagreement about the incidence of dyslexia in the general school population. Meier (1971) reports that

possibly ten to fifteen percent of the school population experiences this difficulty. Rabinovitch (1968) suggests about three percent. Newton (1974) suggests that as many as 28 percent of the children entering school could be at risk in learning to read because of dyslexic - type language difficulties. Slingerland (1974) indicates that 25 percent of the children going to school may have specific language difficulties.

Much of the variation in these estimates is largely due to differing interpretations of the nature of dyslexia.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 SUMMARY

This investigation attempts to identify and analyse some of the behavioural symptoms relating to a specific language/reading disability, commonly known as dyslexia. Much research on the topic has affirmed that a constitutional disorder selectively affecting the ability to learn to read and to spell, exists. Nevertheless, many psychologists and educationists blame the failure to learn to read on low intelligence, environmental conditions, unsuitable instruction and emotional disturbance. The concern of this study is the relatively small group of children for whom these reasons do not provide the explanation.

This issue is of more than theoretical importance. To be unable to read or write has a crippling effect on the education, emotional well-being and future prospects of children.

Only when the symptoms characterising dyslexia are recognised, can appropriate help and support be given to correct these handicaps.

The objective of this investigation was to identify the incidence of some of those features by which children who conformed in general to an acceptable definition of dyslexia might be recognised. The prevalence of this disability among Kenyan children was also studied. In view of suggestions made in recent years that there may be several forms of dyslexia characterised by different patterns of disability, a further objective was to analyse such patterns for the purpose of planning suitable remediation programmes. Some educationists suggest that, normally, only one type of disability can be corrected at a given time.

The subjects were 35 dyslexic children, 11 girls and 24 boys, selected from 151 children initially referred by class teachers. They ranged in age from 9 years to 12 years 11 months and met the following criteria:

Performance not less than Grade III (over 25 percentile) in the Standard Progressive Matrices and not less than 25 percentile rank on the Goodenougn-Harris Draw-A-Man Scale; reading age and/or spelling age at least one year below chronological age; physically normal; emotionally stable; and school factors of attendance in a 'High Cost' school at least two year prior to the investigation, without major absence from school, and no more than three changes of school.

Details relating to socio-economic status of parents, school attendance, extra tuition, performance in school work and behaviour, physical and emotional stability, parental interest and an estimate of intelligence on a five-point scale were obtained from schools where tne 'Check List for Detecting Specific Language/ Reading Difficulties' was completed by class teachers.

Diagnostic testing included the administration of the Standard Progressive Matrices, the Goodenough - Harris Draw-A-Man Scale, and tests

of reading and of spelling. The 'Screening Test for Identifying Children With Specific Language/ Reading Disability' was administered to analyse dyslexic tendencies and to compile the 'Dyslexia Profile' for all the 35 children.

A summary of the results are as follows:

Home - The majority of the dyslexic group come from the two upper socio-economic classes. A considerable number of parents were said by the school to be uninterested or only slightly interested in their child's progress or behaviour at school. In 10 cases, parents showed a definite concern.

School - The discrepancy between chronological and spelling ages was greater than between chronological and reading ages, 60% of the dyslexic group being retarded in spelling by 3 to 6 years and 40% being retarded in reading by 3 to 5 years. All the dyslexics attended the Nairobi City Council 'High Cost' Schools, the most favoured city schools. Extra help with reading had been given to 14 dyslexics, 40 per cent, but only 9 children had received help

in a recognized remedial situation, either in a remedial class or from a visiting remedial teacher. No help had been given to 43% of the group. Many of the dyslexic children performed well in verbal expression, art, handwork and games according to teachers' ratings on school work.

Behaviour - School reports indicated that most of tne dyslexic children exhibited normal behaviour; nevertheless, there were some signs of tension among the dyslexic group.

Intelligence - Sixty three percent of the dyslexic group performed at or above the 50th percentile on the Progressive Matrices while only 54 percent of the group scored within tne same percentile range on tne Goodenougn - Harris Scale. A fairly high percentage of the dyslexic group were therefore rated 'low average', and performed between the 25th.and 50th. percentile on both tests. Results for this proportion of the group may be less accurate than those attaining higher scores. Low results on the intelligence tests excluded 83 children from the study. Our estimate (2%) for incidence of

dyslexia may well err on the conservative side because of these discrepancies.

The Screening Test - Behavioural difficulties described as inversions, transpositions, reversals, substitutions, omissions, insertions and faulty sound blending were the most common errors made by almost all the dyslexic children, irrespective of age. These confusions are reflected in left-to-right and up-and-down dis-orientation and incorrect sequencing of letters, words and numbers. Letters and syllables within words are confused because of faulty Visual or Auditory perceptual recall function, or both. Although many of the younger children made numerous errors in incorrect letter forms by mixing lowercase and capital letters, this difficulty tends to decrease with age. The behavioural difficulties, self corrections and omissions, tend to increase with age. Errors made on the Screening Test showed consistent patterns of behavioural difficulties indicative of a specific language/reading disability. There was a fairly wide divergence between 'Wrong' errors and 'Confusion' errors on the subtests which is highly significant of dyslexia. Many of the dyslexics

who made high performance scores on the Screening Test were nonetheless retarded in reading and spelling by three or more years. All 35 children were labelled as Visual Dyslexics. Visual Dyslexia was also the only form to occur alone (unaccompanied by other forms of dyslexia). It occured in two cases. In all other cases Visual Dyslexia was accompanied by other forms of dyslexia, most frequently, Auditory Dyslexia. There was indication of a continuum of degrees of dyslexia. Botn the severely and moderately dyslexic children exhibited similar features characterising dyslexia. Teachers' ratings on frequency of behavioural symptoms on the 'Check List' in most cases were slightly lower than the frequency ratings obtained on the Screening Test. Nevertheless, tnere was indication of a definite relationship between them.

7.2 CONCLUSIONS

This was a study of 35 children retarded in reading and spelling. They were of at least average intelligence, physically normal, emotionally stable, with continuous schooling and predominantly from upper and middle class homes.

The following conclusions are drawn:

The results of this investigation support the presence of dyslexia in Kenyan children.

There is evidence from the analysis of behavioural patterns to suggest that a sequencing disability may underlie the reading and spelling retardation.

The results of this study were too inconclusive to establish a reliable estimate of prevalence.

There is evidence to suggest that behavioural patterns change with advancing age.

The importance of identifying differing patterns of dyslexia for the purpose of planning suitable remedial help, is demonstrated.

The results of this study support the existence of a relationship between performance scores on the Screening Test and reading and spelling retardation.

Results in this study support the presence of a continuum of degrees of dyslexia.

The study supplied evidence to support the notion that different types of dyslexia rarely appear in isolation. One type is normally accompanied by other types.

Both the severely and moderately dyslexic children exhibited similar behavioural symptoms, suggesting that their disorders are of an essentially similar nature.

The evidence from this study supports the existence of a positive correlation between teachers' ratings on frequency of behavioural symptoms and frequency ratings on the Screening Test.

7.3 RECOMMENDATIONS

The recognition that a specific language/ reading disability exists should lead to those investigations most likely to reveal evidence of its presence and extent. The data obtained in this research requires further backing from a more controlled study to clarify some issues relating to the nature of dyslexia in Kenyan children. Details about the family history need to be explored including: laterality, birth-history, illnesses and the knowledge of left and right. A controlled study involving performance on a battery of tests designed to elicit many of the features associated with dyslexia is essential to a clear understanding of the nature of the disability.

In the initial proposal prepared for this research, a fourth stage was planned to carry out such an investigation. The data obtained from the dyslexic children were to be assessed by comparison witn those obtained from a group of children unselected for reading or spelling ability. The experimental and control groups were to be matched on: age, sex, socio-economic background and type of school. Performance items were to include: reading and spelling tests,

free writing exercises, graphomotor exercises, tests of visual sequential memory, auditory sequential memory, sound blending and sound discrimination. Time and funds did not allow this stage to materialize.

The recognition and identification of specific features associated with dyslexia and an understanding of the nature of the disability are essential first steps before plans can be made for appropriate remediation.

Children who exhibit unusual patterns of learning disability require specialized methods of teaching. There are far too few trained remedial teachers to give such necessary tuition. The class teacher does her best, but when there is a specific impairment in the pupil's capacity to learn to read she is likely to meet with limited success. Learning abilities and disabilities vary from child to child. Knowledge of these and how these disabilities impede learning is needed, if a teacher is to understand why one method is suited to one child but not to another. Only if the existence and nature of the

dyslexic's disorder is recognised is he likely to receive specialized teaching. A mistaken diagnosis or failure of recognition results in inappropriate treatment or none at all.

There is a great need for many more courses for training teachers to deal with specific learning disabilities. First-hand experience of the difficulties to be encountered and of how to overcome them is the most effective way of learning about them. There should be provision of opportunity for remedial teachers to work witn children over a period of time long enough to gain an understanding of the diversity of the problems they will meet.

Many questions about dyslexia remain to be answered. A difficulty in blending sounds was commonly found among the dyslexics. Blending sounds involves the perception, retention, recall and rapid reproduction in a precise order of a sequence of sounds. Research has shown that while some children improve in their ability to deal with sound

sequences others do not, and these make little progress in learning to read. If one knew clearly the nature of the processes involved and how the processing of sequences might be facilitated, teaching techniques could be improved.

The need to identify at an early age tne reason why a child is failing to learn to read is paramount. Failure of recognition leads to avoidable misery, anxiety, frustration and depression. How soon can dyslexia be identified? Investigations cited by Naidoo (1972) indicate that it is possible to forecast, when children first go to school, those likely to find reading difficult. Slingerland (1974) has developed Pre-Reading Screening Procedures for the purpose of identifying children whose individual performances indicate modality weaknesses that call for specific instruction to prevent early failure. Screening, carried out at the beginning of schooling, would also provide data on incidence on which plans for future needs could be based. Early screening would also have an effect on management of children. A teacher aware that a child shows

uneveness of development and aware of the specific areas which are 'out of step' would be in a better position to give the understanding and support so essential to emotional well-being. She could also ensure that the child is given the kind of help he needs. Preventive and supportive steps taken early are immeasurably more fruitful than attempts to remedy a problem which becomes increasingly complex as the child grows older.

APPENDIX A

TABLES

Table 1

Pilot Study: Number of Errors (Percentage) on the "Screening Test for Identifying children With Specific Language/Reading Disability" and Reading (Percentile) on the "Wide Range Achievement Test" (WRAT).

	WRAT Reading (% ile)	Screening Test No. of Errors (%)
Age:		
9 years	98 %ile	9.1%
	98 %ile	8.3%
	99 %ile	6.6%
	85 %ile	7.4%
10 years	99 %ile	3.3%
	32 %ile	9.9%
	73 %ile	7.4%
	86 %ile	3.3%
	68 %ile	8.3%
11 years	99 %ile	2.5%
	98 %ile	0.8%

TABLE 2

Estimated Achievement in School Work

(Teachers' Report)

	Dyslexic Group (35)
Reading: Comprehension	
Very good	0
Good	0
Average	5
Weak	12
Very backward	17
Unknown	1
Reading: Vocabulary	
Very good	0
Good	0
Average	4
Weak	12
Very backward	15
Unknown	4
Spelling	
Very good	0
Good	0
Average	1
Weak	9
Very backward	23
Unknown	2

Table 2 (continued)

	Dyslexic Group (35)
Writing: Handwriting	
Very good	0
Good	3
Average	8
Weak	11
Very backward	11
Unknown	2
Writing: Written Expression	
Very good	0
Good	1
Average	0
Weak	11
Very backward	23
Unknown	0
English Language:	
Verbal expression	
Very good	1
Good	8
Average	8
Weak	16
Very backward	1
Unknown	1

Table 2 (continued)

	Dyslexic Group (35)
English Language:	
Grammar	
Very good	0
Good	0
Average	7
Weak	15
Very backward	12
Unknown	1
Arithmetic	
Very good	0
Good	3
Average	7
Weak	12
Very backward	11
Unknown	2
Drawing (art)	
Very good	1
Good	6
Average	20
Weak	3
Very backward	4
Unknown	1

Table 2 (continued)

	Dyslexic Group (35)
Handwork (crafts)	
Very good	3
Good	5
Average	16
Weak	6
Very backward	1
Unknown	4
Physical Education and Sports	
Very good	5
Good	12
Average	11
Weak	4
Very backward	0
Unknown	3

TABLE 3

Teachers' Estimate of Intelligence and Performance on the Standard Progressive Matrices and Goodenough - Harris Draw - A - Man Scale for 35 Dyslexic Children.

Teachers' Estimate	Progressive Matrices (%ile groups)	Goodenough - Harris Scale (Percentile Rank)
Rated Very Bright	-	-
Rated Bright	Bt. 25 & 50%ile	63
Rated Average		
	At 90%ile	58
	Bt.75 & 90%ile	79
	Bt.75 & 90%ile	71
	Bt.50 & 75%ile	99
	Bt.50 & 75%ile	63
	Bt.50 & 75%ile	47
	Bt.50 & 75%ile	42
	Bt.50 & 75%ile	34
	Bt.50 & 75%ile	29
	Bt.50 & 75%ile	25
	At.50%ile	58
	Bt.25 & 50%ile	73
	Bt.25 & 50%ile	63

Table 3 (continued)

Teachers' Estimate	Progressive Matrices (%ile groups)	Goodenough - Harris Scale (Percentile Rank)
Rated Average	Bt.25 & 50%ile	61
	Bt.25 & 50%ile	47
	Bt.25 & 50%ile	47
	Bt.25 & 50%ile	32
Rated Below Average	At 90%ile	93
	At 90%ile	37
	Bt.75 & 90%ile	45
	At 75%ile	25
	Bt.50 & 75%ile	55
	Bt.50 & 75%ile	39
	At 50%ile	66
	At 50%ile	61
	At 50%ile	50
	Bt.25 & 50%ile	96
	Bt.25 & 50%ile	79
	Bt.25 & 50%ile	42
	Bt.25 & 50%ile	29
Rated Dull	Bt.50 & 75%ile	66
	At 50%ile	37
	Bt.25 & 50%ile	84
	Bt.25 & 50%ile	34

Table 4

"Screening Test for Identifying Children with Specific Language/Reading Disability":

Analysis Showing Confusion for 12 Dyslexic Children Aged 9 to 9 years 11 months.

Confusions	Number of Errors Showing Confusion for 12 Dyslexic Children											
Total : Points	121	121	121	121	121	121	121	121	121	121	121	121
Total Errors:Wrongs	25	28	30	30	31	31	36	39	40	60	61	66
Reversals,Transpositions,Inversions etc.	18	22	18	22	22	26	27	24	33	44	33	53
Omissiona	3	6	4	6	3	6	2	4	2	.6	18	10
Self-Corrections	0	1	1	2	5	17	8	3	5	10	1	6
Incorrect Number, Letter & Geometric Forms	9	2	10	6	7	22	5	2	28	24	22	18
More Than One Item Marked	0	0	0	0	0	0	0	0	0	0	0	0
Weaknesses ('X')	-	-	-	-	-	X	-	-	X	X	-	-
Total: Confusions	30	31	33	36	37	71	42	33	68	84	74	87

Table 5

"Screening Test for Identifying Children With Specific Language/Reading Disability": Analysis Showing Confusion for 11 Dyslexic Children Aged 10 to 10 years 11 months.

Confusions	Number of Errors Showing Confusion for 11 Dyslexic Children.										
Total: Points	121	121	121	121	121	121	121	121	121	121	121
Total Errors: Wrongs	29	33	37	39	42	48	50	51	65	66	67
Reversals, Transpositions, Inversions etc.	18	17	29	23	29	28	43	34	44	24	30
Omissions	5	10	6	4	11	11	6	10	11	13	11
Self-Corrections	0	18	10	18	5	3	13	9	6	8	12
Incorrect Number, Letter and Geometric Forms	10	11	13	24	19	20	6	26	1	31	21
More Than One Item Marked	0	0	0	0	0	0	0	0	0	0	0
Weaknesses ('X')	-	X	-	-	X	X	-	X	-	X	X
Total : Confusions	33	56	58	69	64	62	68	79	62	76	74

Table 6

"Screening Test for Identifying Children With Specific Language/Reading Disability": Analysis Showing Confusion for 8 Dyslexic Children Aged 11 to 11 years 11 months and 4 Dyslexic Children Aged 12 to 12 years 11 months.

	Number of Errors Showing Confusion											
Confusions	Dyslexic Children Aged 11 (8)								Dyslexic Children Aged 12(4)			
Total: Points	121	121	121	121	121	121	121	121	121	121	121	121
Total Errors:Wrongs	21	24	28	38	39	45	45	62	37	38	52	72
Reversals,Transpositions,Inversions etc.	17	16	19	25	28	26	30	48	30	30	34	49
Omissions	1	5	7	5	6	12	7	9	8	10	5	12
Self-Corrections	1	13	0	2	9	6	15	2	14	6	14	3
Incorrect Number, Letter & Geometric Forms	1	3	5	33	7	2	1	16	7	6	9	1
More Than One Item Marked	0	0	0	0	0	0	0	0	0	0	0	0
Weakness ('X')	-	X	-	X	-	-	-	X	X	-	X	-
Total: Confusions	20	37	31	65	50	46	53	75	59	52	62	65

Table 7

"Screening Test for Identifying Children With Specific Language/Reading Disability": Number of Errors Showing Confusion on Each of the Subtests for 12 Dyslexic Children Aged 9 to 9 years 11 months.

Subtests	Points	Number of Errors Showing Confusion for 12 Dyslexic Children											
1.Copying - Chart	76	7	20	8	0	-	22	10	10	17	19	11	-
1.V.P.M. & V.Dis.	14	2	1	1	2	2	2	2	2	3	6	2	4
3.V.P.M. - K.	12	5	7	3	9	7	10	7	4	14	10	9	21
4.A with V.K.Ass'n													
Letters	5	8	2	5	4	2	10	4	5	8	7	16	5
Numbers	6	1	0	2	0	2	5	0	2	3	0	2	2
Spelling	25	7	10	13	11	8	15	8	8	17	19	19	18
5.A.Dis. with V.K.	40	2	3	4	2	7	18	14	4	20	29	19	20
6.A. with V. Ass'n	14	2	4	4	3	3	2	4	3	3	5	4	8
7.Orientation	5	3	4	1	5	6	9	3	5	0	8	3	9
8.Ecolalia & A. Sequential M. (V.G.,G,F,P,)		G	G	G	F	V.G.	F	G	F	G	G	F	P
Totals	121	30	31	33	36	37	71	42	33	68	84	74	87

Table 8

"Screening Test for Identifying Children with Specific Language/Reading Disability": Number of Errors Showing Confusion on Each of the Subtests for 11 Dyslexic Children Aged 10 to 10 years 11 months.

Subtests	Points	Number of Errors Showing Confusion for 11 Dyslexic Children										
1.Copying-Chart	76	4	30	10	7	13	17	4	18	9	25	22
2.V.P.M. & V.Dis.	14	1	3	1	4	1	2	5	2	4	2	3
3.V.P.M. - K.	12	4	12	10	9	10	7	6	14	12	12	14
4.A. with V.K. Ass'n-												
Letters	5	2	4	5	12	12	7	9	4	3	2	5
Numbers	6	1	0	3	4	2	1	0	0	2	2	2
Spelling	25	6	11	11	17	14	24	22	20	18	23	21
5.A. Dis. with V.K.	40	7	14	17	15	12	15	18	26	14	25	18
6.A. with V. Ass'n.	14	6	4	4	3	4	3	3	5	6	8	4
7.Orientation	5	6	8	7	5	9	3	5	8	3	2	7
8.Ecolalia & A. Sequential M. (V.G,G,F,P.)		G	G	F	G	P	F	F	P	V.G.	G	G
Totals	121	33	56	58	69	64	62	68	79	62	76	74

Table 9

"Screening Test for Identifying Children with Specific Language/Reading Disability": Number of Errors Showing Confusion on Each of the Subtests for 8 Dyslexic Children Aged 11 to 11 years 11 months and 4 Dyslexic Children Aged 12 to 12 years 11 months.

Subtests	Points	Number of Errors Showing Confusion: Dyslexic Children Aged 11								Dyslexic Children Aged 12			
1.Copying - Chart	76	11	29	-	9	14	11	10	12	6	23	7	4
2.V.P.M. & V. Dis.	14	3	4	1	1	4	5	3	2	3	2	2	4
3.V.P.M. - K.	12	3	7	5	9	6	10	8	15	8	5	12	8
4.A. with V.K. Ass'n Letters	5	3	4	2	13	2	7	2	5	2	6	5	8
Numbers	6	0	3	2	2	2	2	0	0	0	0	0	7
Spelling	25	4	8	8	15	13	12	11	20	21	17	16	15
5.A. Dis. with V.K.	40	4	5	1	17	13	2	18	24	7	10	11	11
6.A. with V. Ass'n.	14	2	0	1	4	5	2	5	4	7	5	6	6
7.Orientation	5	1	6	11	4	5	6	6	5	11	7	10	6
8.Ecolalia & A. Sequential M. (V.G,G,F,P.)		G	F	V.G.	F	G	F	V.G.	G	P	F	F	P
Totals	121	20	37	31	65	50	46	53	75	59	52	62	65

Table 10

Performance on the "Screening Test for Identifying Children With Specific Language/Reading Disability" in Relation to Achievement (Reading and Spelling Retardation in Months) and Intelligence Level (Progressive Matrices, Percentile Groups) for 35 Dyslexic Children.

Age	Reading Retardation	Spelling Retardation	Matrices %ile Groups	Total Errors and Confusions
9 yrs.	21 mths	26 mths	Bt.25&50%ile	66+87=154
	26 mths	30 mths	At90%ile	40+68=148
	32 mths	36 mths	Bt.75&90%ile	60+84=144
	37 mths	43 mths	Bt.25&50%ile	61+74=135
	6 mths	24 mths	Bt.25&50%ile	31+71=102
	13 mths	16 mths	Bt.50&75%ile	36+42= 78
	14 mths	31 mths	At.50%ile	39+33= 72
	19 mths	21 mths	At 50%ile	31+37= 68
	16 mths	24 mths	At 75%ile	30+36= 66
	15 mths	19 mths	Bt.50&75%ile	30+33= 63
	27 mtns	27 mths	Bt.25 &50%ile	28+31= 59
	14 mths	20 mths	At 50%ile	25+30= 55

(Table 10 continued)

Age	Reading Retardation	Spelling Retardation	Matrices %ile Groups	Total Errors & Confusions
10 yrs.	57 mths	54 mths	Bt.25&50%ile	66+76=142
	44 mths	44 mths	Bt.25&50%ile	67+74=141
	33 mths	49 mths	At 90%ile	51+79=130
	54 mths	58 mths	Bt.25&50%ile	65+62=127
	55 mths	56 mths	Bt.50&75%ile	50+68=118
	40 mths	49 mths	At 50%ile	48+62=110
	34 mths	35 mths	Bt.25&50%ile	39+69=108
	37 mths	35 mths	Bt.75&90%ile	42+64=106
	20 mths	39 mths	Bt.50&75%ile	37+58= 95
	14 mths	34 mths	At 90%ile	33+56= 89
	22 mths	25 mths	Bt.25&50%ile	29+33= 62
11 yrs.	68 mths	74 mths	Bt.25&50%ile	62+81=143
	44 mths	52 mths	Bt.25&50%ile	38+65=103
	35 mths	52 mths	At 50%ile	45+53= 98
	33 mths	38 mths	At 50%ile	45+46= 91
	50 mths	58 mths	At 50%ile	39+50= 89
	14 mths	32 mths	Bt.75&90%ile	24+37= 61
	0 mths	47 mths	At 50%ile	28+31= 59
	38 mths	37 mths	Bt.50&75%ile	21+20= 41
12 yrs.	60 mths	68 mths	At 50%ile	72+65=137
	54 mths	59 mths	Bt.25&50%ile	52+62=114
	52 mths	55 mths	Bt.50&75%ile	37+59= 96
	53 mths	60 mths	Bt.25&50%ile	38+52= 90

APPENDIX B

CHECK LIST FOR DETECTING

SPECIFIC LANGUAGE/READING DIFFICULTIES

Date.....
Name of child.....Sex.....
Date of Birth.....Age..... .....
Parents or Guardian.....
Address of Parents or Guardian.....
School.....Class.....
Teacher completing this form.....

INSTRUCTIONS: BEFORE ticking one of the categories: Always, Usually, Rarely or Never, in each of the items below, CAREFULLY READ the attached GUIDE. This Guide provides examples of behavioural symptoms which can help you make an assessment of the child's reading, spelling or writing difficulties, if any. THEN, AND ONLY THEN, tick the category in each of the 12 items below which best describes the child.

		Always	Usually	Rarely	Never
1.	Does the child have particular difficulty with reading?	———	———	———	———
2.	Does the child have particular difficulty with spelling and/or writing?	———	———	———	———
3.	Does the child leave letters out of words or add letters to words?	———	———	———	———
4.	Does the child put letters, numbers or words in the wrong order?	———	———	———	———

	Always	Usually	Rarely	Never
5. Does the child seem to be unable to learn the sounds of letters and words?	____	____	____	____
6. Does the child have difficulty in pronouncing long words or phrases?	____	____	____	____
7. Is the child unsure of the difference between left and right?	____	____	____	____
8. Does the child find arithmetic difficult?	____	____	____	____
9. Is the child confused over time and dates? (Sequence)	____	____	____	____
10. Do instructions or dictation given by the teacher have to be repeated?	____	____	____	____
11. Is the child unusually clumsy?	____	____	____	____
12. Do you have tne impression that there are irregularities and inconsistencies in the child's performance?	____	____	____	____

A GUIDE - TO DETECT SPECIFIC LANGUAGE/READING DIFFICULTIES

This guide will help you answer the 12 items in the "Check List for Detecting Specific Reading Difficulties".

INSTRUCTIONS: CAREFULLY READ the examples of behavioural symptoms below which describe each item in the Check List. These examples can help you to assess the child's reading, spelling or writing difficulties, if any.

1. Does the child have particular difficulty with reading?

   - mistakes letters and words with the same shape but different orientation e.g. m/w; b/d; N/U; f/t; 'was' for saw.
   - loses place while reading aloud
   - reads silently or aloud far more slowly than peers (word by word reading)
   - substitutes words which distort meaning, e.g. 'cat' for mouse; 'when' for where
   - can't sound out words
   - has difficulty pronoucing words correctly.

2. Does the child have particular difficulty with spelling and/or writing?

   Spelling:

   - Spells words as they sound, e.g. 'belev' for believe
   - omits parts of words (see item 3 below)
   - reverses the order of letters in a word (see item 4 below)
   - asks teacher to repeat spelling dictation
   - spelling is poor compared to peers.

   Writing:

   - whispers while writing
   - letters and numbers are irregularly spaced
   - overall writing effort is awkward, uneven
   - has difficulty transferring from manuscript to cursive writing
   - uses incorrect writing pattern for letters and numbers, e.g. 7[illegible]; 9[illegible]; f[illegible]; [illegible] for 5.
   - has difficulty copying accurately from the blackboard or textbook.

3. Does the child leave letters out of words or add letters to words?

   - leaves letters out of words, e.g. 'sudly' for suddenly; 'consently' for consequently
   - adds letters to words, e.g. 'sudendly' for suddenly; 'farmerer' for farmer.

4. Does the child put letters, numbers or words in the wrong order?

   - e.g. 'b' for d; 'left' for felt; 'saw' for was; '327' for 723; '15' for 51.

5. Does the child seem to be unable to learn the sounds of letters and words?

   - can't distinguish differences in vowel sounds, e.g. hen and easy, bought and about
   - can't distinguish differences in consonant sounds, e.g. d/t; dick/tick; m/n; th/f.

6. Does the child have difficulty in pronouncing long words or phrases?

   - exhibits garbled pronunciation, e.g. 'baksets' for baskets; 'aminals' for animals; 'hostipal' for hospital.

7. Is the child unsure of the difference between left an right?

   - mistakes own left from right (confuses left hand with right-hand side of paper)
   - has difficulty with directional terms such as: under/above; in front of/behind
   - might write with the right hand and use the left foot to kick a ball (ambilateral)
   - frequently gets lost in familiar surroundings.

8. Does the child find arithmetic difficult?

   - can't determine what number follows 8 or 16
   - may begin to add in the middle of a subtraction problem
   - has difficulty remembering arithmetic tables

9. Is the child confused over time and dates?

   - can't remember the days of the week in order
   - can't remember the months of the year in order
   - has trouble telling time
   - has difficulty remembering birth date.

10. Do instructions or dictation given by the teacher have to be repeated?

    - can't follow teacher's oral instructions or dictation without asking the teacher to repeat
    - performs poorly on dictated tasks compared with peers
    - rarely finishes dictation work
    - can't correctly recall oral directions when asked to repeat
    - has difficulty relating ideas in logical sequence.

11. Is the child unusually clumsy?

    - bumps into things accidentally
    - accidentally breaks and tears things
    - poor coordination (can't skip or hop on one foot more than five times at one go)
    - stiff and clumsy in running, ball playing, walking.

12. Do you have the impression that there are irregularities and inconsistencies in the child's performance?

    - excessive inconsistency in quality of performance from day to day
    - seems very bright in some ways but still does poorly in reading and/or writing and/or spelling
    - repeats the same behaviour over and over
    - easily distracted, attention frequently wanders.

APPENDIX C

SCHOOL REPORT (CONFIDENTIAL)

Date form is completed:..... ....
Name of Child:..... Sex:.....
Date of Birth:..... Age:.....
School:.....Date of Admission:.....
Standard (Class).....
Parent or Guardian.....Telephone.....
Address of Parent or Guardian:.....
Occupation of Parent.....
Teacher completing this form:.....

SCHOOL RECORDS

Average Age of Class:.....
Position in class.....No. of children in class:.....
Attendance: regular.....; irregular.....
(tick one)
Comments, if any.....

SCHOOL WORK - Estimates of quality of work.(Tick the category in each of the items below which best describes the child.)

	Very Backward	Weak	Average	Good	Very Good
(a) Reading:					
i) comprehension	____	____	____	____	____
ii) vocabulary	____	____	____	____	____
(b) Spelling (dictation)	____	____	____	____	____
(c) Writing:					
i) handwriting	____	____	____	____	____
ii) written expression (Composition work)	____	____	____	____	____
(d) English language:					
i) verbal expression (spoken English)	____	____	____	____	____
ii) grammar (language structure)	____	____	____	____	____

	Very Backward	Weak	Average	Good	Very Good
e) Arithmetic	____	____	____	____	____
f) Drawing(art)	____	____	____	____	____
g) Handwork (crafts)	____	____	____	____	____
h) P.E. & Sports	____	____	____	____	____

Comments on other subjects:.....

Best Subject:.....Weakest Subject:.....

Special Abilities and Interests:.....

Is this child attending a special class for remedial work or is he/she receiving individual coaching? (Please give details).

Has this child repeated any classes or received remedial help prior to this 1976 academic school year? (Please give details).

Comments on School Work, if any:

BEHAVIOUR (Tick the category in each of the items below which best describes the child).

	Very good	Good	Fair	Poor
1. Cooperation in the classroom	____	____	____	____
2. Cooperation in the playground	____	____	____	____
3. Social acceptance by classmates(peers)	____	____	____	____
4. Temperament (how child reacts to different situations)	____	____	____	____
5. Attention Span	____	____	____	____

	Very Good	Good	Fair	Poor
6. Completion of class assignments	____	____	____	____
7. Attitude:				
i) to teachers	____	____	____	____
ii) to older children	____	____	____	____
iii) to younger children	____	____	____	____
iv) to school work	____	____	____	____

Describe any emotional or behavioural symptoms exhibited by this child that may indicate a severe emotional condition.

PARENTS (Tick as you did for Behaviour)

	Very Good	Good	Fair	Poor
1. Interest in child's progress	____	____	____	____
2. Interest in child's behaviour	____	____	____	____

How is parental interest, or lack of it, shown to child, and/or school?

BODILY CHARACTERISTICS

1. Describe physique (compared with classmates).

2. Are there any indications of defects, ill health etc? (Please give details.)

3. Are there any problems with eyes or ears? (Please explain).

INTELLIGENCE (Estimated to be - tick one)

Very bright.....

Bright:..... .

Average:.....

Below average:.....

Dull:.....

Comments, if any:..... .....

INFORMATION ON TESTS PERFORMED

If the child has been given any tests by schools or clinics please supply details.

Name and Description of Tests Used	Date given	Results
Psychological Tests		
1.		
2.		
3.		
Scholastic Tests		
Reading (Age)		
Arithmetic (Age)		
Others		

ADDITIONAL INFORMATION

Please write here any comments or information which may be of value in assessing this child's reading, spelling or writing difficulties.

APPENDIX D

SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

SUMMARY

Name:.....Birth date:.....

Age:.....Date of Screening:.....

Yr. Mo.

School:.....Standard(s) Repeated:.....

Intelligence Tests:

1. Standard Progressive Matrices.....

%ile Group/Grade

2. Goodenough-Harris Draw-A-Man:.....

%ile Rank

Attainment Tests:

1. Schonell Graded Word Reading Test:.....

Reading Age

2. Schonell Graded Spelling Test:.....

Spelling Age

Handedness R.....L.....Both.....

Comments

Signature of Evaluator

Date:

SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

Name:.....Birthdate:.....Age:.....

Date:.....School:.....Std.:.....

DYSLEXIA PROFILE

Visual Dyslexia:..... none moderate pronounced severe

Auditory Dyslexia:..... none moderate pronounced severe

Dysgraphia:..... none moderate pronounced severe

Visual Dyslexia	Auditory Dyslexia	Dysgraphia
- Perceives symbols backward, (inversions) in scrambled sequence (transpositions)	-Does not distinguish separate phonic elements in words	-Writes letters, words, numerals backward
- Reverses words, syllables, number units	-Cannot detect syllables	-Cannot recall how to write certain symbols
- Leaves off endings	-Cannot blend word parts into whole word units	-Distorts letters or numerals
- Misreads similar words, letters, numerals	-Cannot apply simple phonic rules to reading or spelling	-Has difficulty writing legibly
- Leaves out letters in words (omissions)	-Gives garbled pronunciation to common words	-Uses backward motions in writing certain symbols
- Adds letters to words (insertions)	-Writes words phonetically	-Has difficulty copying accurately
- Cannot recall correct sequence of letters, words, numerals	-Asks speaker to repeat	-Has difficulty making simple shapes (geometrical)
- Has difficulty recalling information in sequence (days of week, months of year (etc.)	-Subvocalizes while reading or writing	-Leaves out letters in word when writing
	-Has difficulty in reproducing a sequence of sounds	-Adds letters to words when writing.

SCREENING TEST FOR IDENTIFYING CHILDREN WITH SPECIFIC LANGUAGE/READING DISABILITY

Test 1 Copying from a Sample

(The child copies the story on the chart)

Bob and Dan

Bob and Dan saw Sam Watts on the dock. The three men stopped. "Did you see the big ship?" asked Sam.

"We sure did," Dan and Bob said. "It must be a mile long."

Bob and Dan saw Sam was in a hurry. "I have to run," Sam said. "See you later."

Test 2 Visual Perception-Memory with Visual Discrimination

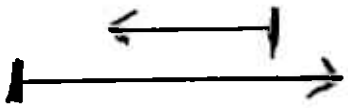
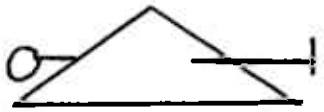
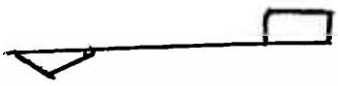
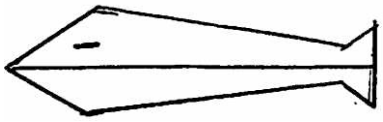
(The child puts a circle around the words, group of letters or numbers that matches with the one on the card).

1.	uran	marn	narw	narm	yarn	warn	wran
2.	spot	stop	tops	post	stob	sbot	tods
3.	sliver	silver	vilser	revils	revlis	selvir	verlis
4.	trad	brat	rapt	part	prat	bart	trap
5.	tums	tsum	smut	swnt	tsuw	must	wnst
6.	severe	esrever	reverse	eversen	servere	neverse	nervese
7.	sheeb	speeh	sheed	skeey	sheep	speey	peehs
8.	poop	dood	boop	poob	boob	doob	doop
9.	tarsh	shraf	farsh	shart	trash	frash	shrat
10.	mash	sham	wash	shaw	whas	hsaw	sahw
11.	vsw	wsv	msw	wsm	vsu	usv	vsm
12.	lab	lad	bal	dal	pal	bsl	lsb
13.	73	57	75	78	37	25	52
14.	984	489	684	894	948	486	648

Test 3 Visual Perception-Memory and Kinesthetic-Motor Performance

(The child copies exactly what he sees exposed on the card.)

1. station
2. advance
3. mountain
4. 67 - 519
5. 5 x 936

6. 
7. 
8. 
9. 

10. from these
11. blue barn
12. wild animals and birds

Test 4 Auditory Perception-Memory with Visual-Kinesthetic-Motor Association

(The child writes exactly what is dictated to him.)

1. b-e-g
2. m-f-p-l
3. t-z-c-b
4. one-twenty-one
5. f-t-j-i-h
6. three-nine-eight-twelve
7. b-v-d-p
8. eighteen-forty-five
9. fifty-seven-ninety-six-twenty-one
10. put the tub on top
11. dig
12. ate
13. play
14. duck
15. this
16. saw
17. pig
18. rode
19. please
20. buck
21. think
22. was
23. big
24. goes
25. toes
26. tuck
27. stop
28. post
29. how
30. who

Test 5 Auditory Discrimination with Visual-Kinesthetic Linkage

A. The child writes the first letter HEARD in each word.

1.	tough	(t)	6.	zephyr	(z)
2.	dike	(d)	7.	seldom	(s)
3.	mark	(m)	8.	built	(b)
4.	pat	(p)	9.	fawn	(f)
5.	welt	(w)	10.	vixen	(v)

B. The child writes the last letter HEARD in each word.

11.	pelt	(t)	17.	fuzz	(z) or(zz)
12.	hod	(d)	18.	listen	(n) or(en)
13.	stub	(b)	19.	thrum	(m)
14.	riff	(f)	20.	stir	(r) or(ir)
15.	rave	(v) or(ve)			
16.	hiss	(s) or(ss)			

C. The child writes the first two letters HEARD in each word.

21.	brat	(br)	26.	fluke	(fl)
22.	slake	(sl)	27.	choke	(ch)
23.	twine	(tw)	28.	ship	(sh)
24.	grit	(gr)	29.	tripe	(tr)
25.	plait	(pl)	30.	drouth	(dr)

D. The child writes the last two letters HEARD in each word.

31.	lurch	(ch)	36.	gong	(ng)
32.	mush	(sh)	37.	booth	(th)
33.	smack	(ck)or(ak)	38.	smooth	(th)
34.	lisp	(sp)	39.	wrist	(st)
35.	thump	(mp)	40.	spend	(nd)

Test 6 Auditory Perception-Memory with Visual Association

The child puts a circle around the word, or group of letters or numbers that matches with the one dictated to him.)

1.	wish	which	witch	with	
2.	every	ever	very	even	
3.	chime	shin	shine	chin	
4.	prior	prayer	pry	priory	
5.	write	right	rite	riot	
6.	quit	quiet	quite	quid	
7.	scratch	scarce	scorch	source	
8.	vowel	val	valve	value	
9.	mash	madge	match	mad	
10.	sinker	singer	sinner	seen	
11.	fjd	fjb	tjb	tjd	tjp
12.	832	440	444	404	504
13.	963	369	639	693	936
14.	7-6-4-7	7-4-6-1	7-6-4-1	1-4-6-7	

Test 7 Orientation

(The child writes answers to oral instructions.)

1. Write your birthdate.
2. Write tne months of the year that come before July (in order of months).
3. Write the days of the week that come after Wednesday (in order of days).

Test 8 Echolalia and Auditory Sequential Memory

(The child repeats the phrases, sentences or series of digits EACH THREE TIMES. Test Administrator records child's performance below. Record each attempt exactly as made.)

Phrases

1.	shiny seashell necklace	1._____ 2._____ 3._____
2.	thistles and thorny bushes	1._____ 2._____ 3._____
3.	aluminium animal	1._____ 2._____ 3._____
4.	curiosity seekers	1._____ 2._____ 3._____
5.	announced candidacy	1._____ 2._____ 3._____
6.	conscientious maneuver	1._____ 2._____ 3._____

Test 8 continued

Sentences

7. Three men-raced down the hill-to the boat-in the river.

1. _____
2. _____
3. _____

8. After dark one night-he gave the money-to his best friend.

1. _____
2. _____
3. _____

Series of digits

9. 6 - 5 - 4 - 3 - 2 - 7

1. _____
2. _____
3. _____

10. 8 - 9 - 2 - 7 - 5

1. _____
2. _____
3. _____

Attempts	First	Second	Third
Right	_____	_____	_____
Wrong	_____	_____	_____
Not attempted	_____	_____	_____

Comments

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