

**THE ASSOCIATION BETWEEN LEARNING PROBLEMS  
AND LEARNERS' PROFILES IN PRIVATE PRACTICES IN  
THE LIMPOPO PROVINCE**

by

**ELIZABETH BEZUIDENHOUT**

BA (Potch), HDE (Potch), BEd Psych (Pret), MEd (UNISA) Cum Laude

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SUPERVISER : DR. DC SIBAYA  
CO-SUPERVISER: PROF. PT SIBAYA

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## DECLARATION

I declare that THE ASSOCIATION BETWEEN LEARNING PROBLEMS AND LEARNERS' PROFILES IN PRIVATE PRACTICES IN THE LIMPOPO PROVINCE is my own work and that all resources have been acknowledged by means of references.

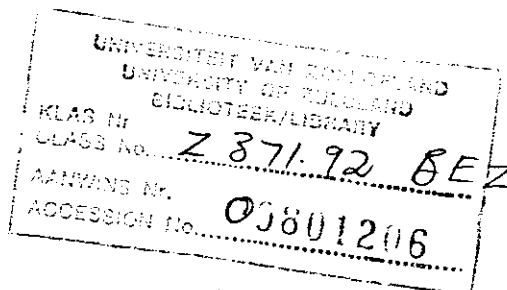
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Elizabeth Bezuidenhout

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## ABSTRACT

### THE ASSOCIATION BETWEEN LEARNING PROBLEMS AND LEARNERS' PROFILES IN PRIVATE PRACTICES IN THE LIMPOPO PROVINCE

The purpose of this study is to show the association between learning problems and demographic factors, to examine the assessment of learning problems and to describe the profiles of learners with learning problems.

Knowledge regarding the above-mentioned could be of assistance in paving the way to examine the relative impact of these variables to predict, assess and treat learning problems.

The method used in this study entails a retrospective review of records. This means that previous psychological records were examined. These psychological reports consist of information on psychodiagnoses, intervention procedures and prognoses.

In the light of the findings from the present study, it appears that there exists a need in South Africa for a solution-focused approach in the prevention and treatment of learning problems. According to the findings of the present study, learning problems can be caused by various demographic factors.

Furthermore, attention is drawn to guide psychologists regarding the assessment of learning problems. A comprehensive test battery is

necessary when assessing learning problems, because learning and emotional problems often co-exist.

Finally, findings from the present study show variations in learners' profiles. Profiles of learners with learning problems seem to differ in a unique way from one another. Therefore, unique remedial programmes for the treatment of learning problems can be designed accordingly.

## LIST OF FIGURES

FIGURE 1 :	<i>Difference between Verbal and Non-verbal Scores bigger than 15.....</i>	79
FIGURE 2 :	<i>Fluid intelligence scores.....</i>	80
FIGURE 3 :	<i>Crystallised intelligence scores.....</i>	81
FIGURE 4 :	<i>Simultaneous processing scores.....</i>	82
FIGURE 5 :	<i>Sequential processing scores.....</i>	83

## LIST OF TABLES

TABLE 1 :	<i>Summary of successive procedures .....</i>	42
TABLE 2 :	<i>A simplified table of word analysis skills .....</i>	58
TABLE 3 :	<i>Visual and auditory dyslexia.....</i>	59
TABLE 4.1:	<i>Demographic characteristics of the study sample.....</i>	72
TABLE 4.2:	<i>Additional characteristics of the study sample .....</i>	74
TABLE 4.3:	<i>Subtest scatter on the SSAIS-R.....</i>	75
TABLE 5 :	<i>Developmental delays by selected demographics.....</i>	76
TABLE 6 :	<i>Developmental delays by verbal IQ test score.....</i>	77
TABLE 7 :	<i>Developmental delays by non-verbal IQ test score.....</i>	78

# CONTENTS

## CHAPTER 1 : STATEMENT OF THE PROBLEM AND DEFINITIONS OF CONCEPTS

1.1	MOTIVATION FOR THE STUDY TO BE UNDERTAKEN .....	14
1.2	STATEMENT OF THE PROBLEM .....	17
1.3	AIMS OF THE STUDY .....	18
1.4	DEFINITIONS OF CONCEPTS .....	18
1.4.1	Learning problems .....	18
1.4.2	Demographic factors .....	18
1.4.3	SSAIS-R test score .....	19
1.4.4	Clinical observation and history .....	19
1.5	METHODOLOGY .....	19
1.6	PLAN OF STUDY .....	20

## CHAPTER 2 : REVIEW OF RELEVANT LITERATURE

2.1	INTRODUCTION TO LEARNING PROBLEMS .....	21
2.2	STUDIES ON THE AETIOLOGY OF LEARNING PROBLEMS.....	23
2.2.1	Physiological theories .....	24
2.2.1.1	DEVELOPMENTAL DELAYS .....	24
2.2.1.2	BIOCHEMICAL REASONS .....	24
2.2.1.3	NEUROLOGICAL DYSFUNCTION L .....	25
2.2.1.4	INTEGRATED BRAIN FUNCTION .....	27
2.2.1.5	ILLNESS .....	26
2.2.2	Psychological theories .....	27

2.2.2.1	AFFECTION .....	27
2.2.2.2	STRESS .....	28
2.2.2.3	TEACHERS' ATTITUDES .....	28
2.2.3	Socio-demographic factors.....	29
2.2.3.1	GENDER .....	29
2.2.3.2	AGE .....	29
2.2.3.3	HOME LIFE.....	30
2.2.3.4	PARENTING .....	30
2.2.3.5	SOCIO-ECONOMIC LEVEL .....	31
2.2.3.6	RACE .....	31
2.2.3.7	MULTILINGUAL SOCIETIES .....	32
2.2.3.8	ACCESS TO EDUCATIONAL PSYCHOLOGICAL SERVICES .....	33
2.2.4	Rapid automatised naming (RAN) .....	33
2.3	STUDIES ON ASSESSMENT OF LEARNING PROBLEMS... ..	34
2.3.1	Assessment challenges.....	35
2.3.2	Guidelines for assessment .....	36
2.3.3	Cognitive measures .....	39
2.3.3.1	INTELLIGENCE TESTS .....	39
2.3.3.2	INTERPRETATION OF INTELLIGENCE TESTS .....	40
2.3.3.3	ACHIEVEMENT TESTS.....	44
2.3.3.4	INTEGRATION OF INTELLIGENCE AND PERFORMANCE TESTS .....	44
2.3.3.5	TESTS FOR SCHOOL BEGINNERS.....	45
2.3.4	Perceptual measures .....	45
2.3.4.1	VISUAL PERCEPTUAL TESTS .....	45
2.3.4.2	AUDITORY PERCEPTUAL TESTS .....	46
2.3.5	Comprehensive measures.....	46
2.3.5.1	PADGET, KNIGHT & SAWYER'S OPERATIONALISATION.....	46
2.3.5.2	WOODCOCK-JOHNSON TEST OF COGNITIVE ABILITIES	

	AND TEST FOR ACHIEVEMENT .....	47
2.3.6	Formal observation scales.....	47
2.3.7	Behavioural and emotional testing .....	47
2.3.8	Informal assessment.....	48
2.3.8.1	INFORMAL OBSERVATION .....	48
2.3.8.2	INFORMAL INTERVIEW.....	49
2.3.8.3	INFORMAL READING INVENTORIES .....	49
2.3.8.4	ONGOING ASSESSMENT IN THE CLASSROOM .....	51
2.4	STUDIES ON THE PROFILES OF LEARNERS WITH LEARNING PROBLEMS.....	52
2.4.1	Reading profile .....	52
2.4.2	IQ test profiles .....	59
2.4.3	Subtle neurological disturbances .....	61
2.4.4	Emotional characteristics .....	62
2.4.5	Socio-economic characteristics .....	62
2.4.6	Language .....	62
2.4.7	Eye functioning.....	63
2.5	CONCLUSION .....	64

## **CHAPTER 3 : RESEARCH DESIGN**

3.1	INTRODUCTION.....	65
3.2	AIMS OF THE STUDY .....	65
3.3	METHODOLOGY .....	66
3.3.1	Study population and design .....	66
3.3.2	Study sample.....	67
3.3.3	Pilot Study .....	68
3.3.4	Data collection .....	68

3.3.5	Data analysis .....	69
3.4	ETHICAL CONSIDERATIONS.....	70
3.5	CONCLUSION .....	70

## CHAPTER 4 : DATA ANALYSIS

4.1	INTRODUCTION TO THE RESULTS .....	71
4.2	RESULTS OF THE STUDY .....	71
Table 4.1	<i>Demographic characteristics of the study sample.....</i>	72
Table 4.2	<i>Additional characteristics of the study sample .....</i>	74
Table 4.3	<i>Subtest scatter on the SSAIS-R .....</i>	75
Table 5	<i>Developmental delays by selected demographics.....</i>	76
Table 6	<i>Developmental delays by verbal IQ test score .....</i>	77
Table 7	<i>Developmental delays by non-verbal IQ test score.....</i>	78
Figure 1	<i>Difference between verbal and non-verbal scores bigger than 15.....</i>	79
Figure 2	<i>Fluid intelligence scores.....</i>	80
Figure 3	<i>Crystallised intelligence scores .....</i>	81
Figure 4	<i>Simultaneous processing scores .....</i>	82
Figure 5	<i>Sequential processing scores.....</i>	83
4.3	CONCLUSION.....	84

## CHAPTER 5 : DISCUSSION OF FINDINGS

5.1	INTRODUCTION.....	85
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5.2	<b>FINDINGS REGARDING THE ASSOCIATION BETWEEN LEARNING PROBLEMS AND DEMOGRAPHIC FACTORS.....</b>	<b>86</b>
5.2.1	Findings on the relationship between learning problems and emotional problems .....	86
5.2.2	Findings on the relationship between learning problems and gender .....	87
5.2.3	Findings on the relationship between learning problems and race .....	88
5.2.4	Findings on the relationship between learning problems and developmental delays .....	89
5.2.5	Findings on the relationship between learning problems and age.....	90
5.2.6	Findings on the relationship between learning problems and second language tuition .....	91
5.3	<b>FINDINGS REGARDING THE ASSESSMENT OF LEARNING PROBLEMS.....</b>	<b>91</b>
5.3.1	Intelligence tests .....	92
5.3.2	Interpreting intelligence tests.....	92
5.3.3	Subtest patterns .....	93
5.3.4	Perception.....	93
5.3.5	Informal assessment .....	94
5.3.6	Integrated results .....	94
5.4	<b>FINDINGS REGARDING THE PROFILES OF LEARNERS WITH LEARNING PROBLEMS .....</b>	<b>95</b>
5.4.1	Emotional functioning.....	95
5.4.2	Difference between verbal and non-verbal scores .....	96
5.4.3	Performance on the Comprehension subtest .....	96
5.4.4	Higher non-verbal IQ scores .....	96
5.4.5	Crystallised intelligence .....	96

5.4.6	Fluid intelligence.....	97
5.4.7	Subtest scatter.....	97
5.4.8	Global IQ score .....	97
5.4.9	Individual subtests.....	97
5.4.10	Sequential versus simultaneous processing.....	98
5.5	LIMITATIONS OF THE PRESENT STUDY .....	99
5.6	RECOMMENDATIONS FOR THE FUTURE .....	100
5.7	CONCLUSION .....	101
	LIST OF REFERENCES .....	103
	ADDENDUM .....	121

# CHAPTER 1

## STATEMENT OF THE PROBLEM AND DEFINITIONS OF CONCEPTS

### 1.1 MOTIVATION FOR THE STUDY TO BE UNDERTAKEN

Many years of enquiry into strategy training of children with learning problems have consistently indicated significant shortcomings in the approach. These shortcomings mainly relate to the persistent elusiveness of generalisation (Male, 1996:156).

Learning problems are a worldwide phenomenon, prevalent in all cultures, races and throughout the economic and social spectrum. It is assumed that the picture in South Africa does not differ significantly from the rest of the world. According to Engelbrecht (2005:16) learning problems seem to be escalating in South Africa.

Learning problems have been the subject of research in South Africa for a long time and still are. In South Africa greater emphasis has been placed on the identification and assistance of learners with learning problems since the nineties (Kapp, 1990:379; Bender & Coetzee, 1995:163).

Numerous studies point out the link between learning and reading ability (Lehto, Scheinin, Kupiainen & Hautamäki, 2001:99; Kapp, 1990:379; Kronenberger & Meyer, 2001:48; Luttrell & Parker, 2001:235). Reading is a basic life skill because of the demands that modern society makes on people.

Paradoxically, reading problems are the most common of all learning problems, with prevalence estimated at 2.5% and 7.5%. Poor reading skills, mainly through the effect of isolation, tend to constrain learners in their communication with others and the environment, and thus limit their overall development (Bender & Coetzee, 1995:163). These limitations often develop into adulthood and can sadly continue for life.

Learning problems may develop in any school year, but they are more obvious in the junior phase because most reading is done aloud (Bender & Coetzee, 1995:163; Kronenberger, 2001:47). If learners' reading levels have reached a satisfactory standard in primary school, they would not necessarily be able to satisfy the demands made on their reading ability in secondary school. Approximately 80-90% of study activities at secondary school level are dependent on higher order learning skills (Bender & Coetzee, 1995:163; Kronenberger, 2001:417).

Higher order learning skills include language use and language development, ability and adequate development in terms of sensing, attending, perceiving, thinking, conceptualising, fantasising and memorising. The above-mentioned skills strongly relate to reading ability, but can be regarded as omnipresent underpinning of the global learning process (Bender & Coetzee, 1995:163).

Learners at secondary school with an inadequate ability to read will most likely underachieve in all the study activities (Bender & Coetzee, 1995:163). Underachievement can lead to school dropout before the end of the tenth grade (Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Kawkins, 2000:568).

Failure to complete secondary school is a nationally recognised problem in America. Certain studies have examined predictors of dropping out of school before students reach the 12<sup>th</sup> grade (Rumberger as cited in Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Hawkins, 2000:568).

In a controversial study Luttrell and Parker (2001:235) argued that conventional wisdom holds that American teenagers do not read or write – they are a media-driven group who prefer movies, television and playing video games. According to Luttrell and Parker this assumption is wrong about teenage literacy. On the contrary, many teenagers are engaged in everyday literacy practices far beyond the school day in ways that their teachers are unfamiliar with.

Over the past few decades there has also been an increase in the number of underprepared students at tertiary level (Hewlett, Boonstra, Bell & Zumbo, 2000:139). The challenge for post-secondary learning resource personnel is to teach those students how to implement strategies that assist them in their academic endeavours.

The causes of learning problems can either be developmental or acquired (through brain damage). Theories of causation of learning problems include physiological theories and psychological causes (Fernald, 1943:31,157). Environmental factors can also play a role in the development of reading problems (Bender & Coetzee, 1995:163). Various other researchers support this opinion and add that learning problems can also be caused by cultural factors (Natchez, 1968:23; Huntsinger, Jose, Larson, Krieg & Shaligram, 2000:745).

Learning problems can manifest in motor, perceptual, cognitive, language and affective-social areas of development (Kapp, 1990:385-394). About fifty percent of learners with learning problems experience hyperactivity or more than one learning problem, for instance with reading, writing and/or mathematics (Kronenberger, 2001:418). When assessing a learner that is experiencing learning problems, it is important to obtain a holistic picture of the problem.

Since literacy plays such an important role in everyday life, it is of paramount importance to identify learning problems in the early school years, even as early as the preschool years (Battin-Pearson et al., 2000:579).

If a learner with learning problems is not assisted appropriately and timeously, life long consequences might be faced on a daily basis. Prevention and early intervention should take place. Understanding the processes of learning problems can help guide the process of creating effective approaches towards prevention and early identification.

## **1.2 STATEMENT OF THE PROBLEM**

In the light of the prevailing occurrence of learning problems, the statement of the problem can now be outlined:

What is the association between learning problems and demographic factors? How can learning problems be assessed effectively? What do profiles of learners with learning difficulties look like?

### **1.3 AIMS OF THE STUDY**

- 1.3.1 To determine the association between learning problems and demographic factors.
- 1.3.2 To examine the assessment of learning problems.
- 1.3.3 To describe the profiles of learners with learning problems.

### **1.4 DEFINITION OF CONCEPTS**

#### **1.4.1 Learning problems**

Learning problems refer to reading, mathematics and writing problems. It is also referred to as learning disabilities or learning disorders (American Psychiatric association, 1994: 46). Davis (1997:10; 2003:15) refers to dyslexia as any kind of problem that prevents the learner from growing up as expected.

For the purpose of this study, learning problems will refer to learners with a normal intellectual ability whose scholastic achievement does not correlate with their intellectual ability given their chronological age and age-appropriate education. This interferes significantly with academic achievement or activities of daily living that require these skills. Sensory deficits are not present.

#### **1.4.2 Demographic factors**

Demographic factors refer to emotional problems, gender, race, developmental delays, age and second language tuition.

### **1.4.3 SSAIS-R scores**

SSAIS-R scores refer to scale scores as measured by the Senior South-African Individual Scale-Revised (SSAIS-R) or the Individual Scale for Northern Sotho-Speaking Pupils (NSAIS).

### **1.4.4 Clinical observation and history**

Clinical observation entails an examination of the major systems of psychiatric functioning. Observation is aimed at the person's physical appearance, behaviour, feeling, perception and thought processes (Groth-Marnat, 1999:82). Areas that fall particularly in the scope of this study, is the observation of feeling and perception, especially auditory and visual perception.

Clinical history refers to information regarding the history of the problem, the person's family background, personal history, early and middle childhood and miscellaneous information (Kapp, 1990:39; Groth-Marnat, 1999:77). For the purpose of this study, emphasis will fall on the developmental, social and emotional history of the person.

## **1.5 METHODOLOGY**

The method of investigation will entail a retrospective review of records for primary and secondary school learners with learning problems. A retrospective review of records identify groups of subjects with the disorder, then look backward in time to find associative variables that may explain more about the processes involved in developing learning problems (Hulley & Cummings, 1988:78).

Once the association between learning problems and learners' profiles is investigated, recommendations regarding the prevention, assessment and remediation of learning problems can be made.

## **1.6 PLAN OF STUDY**

Chapter 1 deals with the motivation for the study, the statement of the problem, aims of the study, hypothesis, definitions of terms, methodology and a plan for organising the research.

Chapter 2 will present a literature study relevant to this study and a detailed discussion of the aetiology and assessment of learning problems. It will also focus on profiles of learners with learning problems.

In Chapter 3 the research design will be outlined and the actual implementation of the research plan will be presented systematically.

Chapter 4 will focus on the data analysis and interpretation of the results.

Chapter 5 will be a reflection on the results of the study. Conclusions will be made from the literature study and the present study. Differences and resemblances in comparison to other similar studies will be pointed out. Lastly, limitations of the study will be outlined and recommendations for further research will be suggested.

## CHAPTER 2

### REVIEW OF RELEVANT LITERATURE

#### 2.1 INTRODUCTION TO LEARNING PROBLEMS

Advances in genetics, neurobiological and psychological research on learning problems in past decades have led to a greater understanding of a once hidden disability (Miles & Miles, 1999:10; Snowling, 2000:45). Despite advances in our understanding of the prevention of learning problems through quality instruction and early intervention, large numbers of learners continue to experience learning difficulties. These problems often proceed into adulthood (Miles & Miles, 1999:10; Snowling, 2000:45; Zambo, 1994: 3).

Unfortunately research, diagnosis and intervention are hampered by the lack of consensus about diagnostic labels, the processes underlying learning problems and generally accepted standards or procedures for diagnosis (Bell, McCalum & Cox., 2003:505). How to best assess learning problems and how to provide effective and appropriate interventions remain a controversial issue. Accurate assessment of learning difficulties is important if appropriate support and remediation are to be provided (Miles & Miles, 1999:10; Snowling, 2000:45; Nation & Snowling, 1997:359).

According to a recent survey the use of intelligence testing in the identification of reading problems is increasingly controversial (Speece & Shekitka, 2002:120). This is very much the case in South Africa as well (HPCSA, 2005:1).

Certain researchers are convinced that knowledge of the association between cognitive abilities and reading skill can provide a better understanding of the cognitive precursors of learning problems and

can guide the development of a more uniform assessment of learning problems (Bell et al., 2003:509; Houck, 1984:297). This opinion is supported by Salinger (2003:79) which claims that reading ability is central to learning, success in school and ultimately, success in life.

Understanding more about the process underlying learning problems can assist in designing more effective remedial programmes, especially in the diverse context of South Africa. In this chapter, aetiology, assessment and profiles of children with learning problems will be discussed.

## **2.2 STUDIES ON THE AETIOLOGY OF LEARNING PROBLEMS**

Various researchers stress that the number of problems that can influence learning is as great as the number of factors that work together to allow an automobile to function properly. Instead of starting with a narrow, preconceived notion of what may be causing learning problems, we should have broad models of factors that could explain causes of learning problems (Natchez, 1968:412; Dick, 2001:265).

Learning difficulties may be due to problems in comprehension or to a lag in any other area of development such as perception, motor skills (specifically eye movements), language, social and emotional development. According to Fernald (1943:158-163) and Engelbrecht (2000:55) causes of learning problems may relate to a lack of normal development of certain brain functions, failure to establish unilateral cerebral dominance, lack of corresponding eye and hand dominance, hand preference and individual differences in integrated brain function.

Obrzut and Hynd (1991:281;309) point out that researchers differ from each other regarding which variables are the most critical in the identification of learning problems. Obrzut and Hynd believe that the developmental level of the learner and neuro-psychological functioning play an important role in the development of learning problems. In fact, neuro-psychological functioning appears to be the most prominent factor.

At the same time, there seems to be considerable agreement among other researchers on the role of certain aspects in the aetiology of learning problems (Adams, 1990:5; Badian, 1998:66; Ball & Blachman, 1991:21; Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997:245; Torgesen & Wagner, 1987:59).

Samuels (2001:264) distinguishes between factors inside the head and factors outside the head. Factors inside the head refer to intelligence, language of instruction, decoding ability, background knowledge and schema, test structure, anaphoric terms, metacognitive strategies, language facility, graphic literacy and motivation-attention. Factors outside the head refer to quality of instruction, text topic, conventions of print, clarity of writing style, text readability, format design and structural text elements as well as time.

Samuels (2001:261) furthermore distinguishes between internal and external factors that can influence the learning process. External factors refer to environmental and physical characteristics of text, readability and style, content and external goal set. Internal factors refer to knowledge base, the learner's viewpoint and purpose for reading as well as cognitive resources.

There seems to be a correlation between factors inside the head and internal factors because both refer directly to the learner self. There also seems to be a correlation between factors outside the

head and external factors. Both refer to factors independent from the learner.

Physiological theories, Psychological theories, Socio-demographic factors and Rapid, Automatised Naming (RAN) are discussed under the present heading.

### 2.2.1 Physiological theories

According to various researchers learning problems can be biological in origin (Padget, Knight & Sawyer, 1996:55; Goldberg & Schiffman, 1972:17; Bell et al, 2003:508). In this section developmental delays, biochemical reasons, neurobiological dysfunction, integrated brain function and illness as physiological causes of learning problems will be investigated.

#### 2.2.1.1 DEVELOPMENTAL DELAYS

Research reveals that developmental delays may contribute to developmental learning problems (Padget et al, 1996:55; Goldberg & Schiffman, 1972:17; Bell et al, 2003:508).

Fluid intelligence is biologically based and increases until around the age of 14 (Groth-Marnat, 1999:140). Fluid intelligence enables a learner to solve new problems and perceives relations, similarities and parallels (Brink, 2002:14).

#### 2.2.1.2 BIOCHEMICAL REASONS

Biochemical differences may contribute to developmental learning problems (Padget et al, 1996:55; Goldberg & Schiffman, 1972:17; Bell et al, 2003:508).

In a number of cases, there is evidence of a familial pattern, with members of the immediate family or other relatives exhibiting or reporting a history of similar difficulties (Houck, 1984:295).

### 2.2.1.3 NEUROLOGICAL DYSFUNCTION

A smaller group, whose learning difficulties are believed to reflect a neurological dysfunction, but do not concentrate on overt signs of brain injury, is said to be demonstrating primary learning problems (Houck, 1884:293).

According to Berninger (2001:23) learning difficulty occurs due to phonological processing deficits, orthographic-phonological connections or limitations of fluency (for example automaticity, executive coordination and rate). Mirror reading, reversal and inversions associated with reading problems might be caused by confusion in directional movements of the hands, or of the hand and eye (Fernald, 1943:89).

Bell et al (2003:506) have a much similar vision. Cognitive variables such as auditory processing, phonological awareness, visual memory and visual processing/speed contribute to the prediction of learning. Auditory processing was identified as the strongest factor-especially short-term auditory memory. In English, phonological skills appear to be the most salient predictor of reading ability.

While phonological processing deficits appear to be a key problem underlying most cases of learning problems, there is sufficient evidence to raise the possibility that visual deficits contribute just as much to learning difficulties (Whiteley & Smith, 2001:38).

Types of perceptual deficits are directional (mirror images and letter confusion), general visual (difficulty with distinguishing and remembering visual patterns), cross-modal (difficulty with making connections between different senses), linguistic such as word production (produce the right words when we speak and produce them within a certain time), memory for words (or perhaps reading determines memory), decoding (difficulty regarding automatic

reading; slow at translating visual information into speech) and phonological awareness (deficit in the awareness of the sounds making up the words the learner hears and speaks) (Bryant & Bradley, 1985:22-50).

According to Fernald (1943:157) alexia or word-blindedness can be due to brain lesion and refers to loss of the ability to read. It is also referred to as aphasia, which is essentially a disorder in the perception or understanding of letter-word forms, existing apart from any other language or agnostic disturbances. According to the Frank Vellutino Theory, the root of the problem is a verbal deficit and thus falls in the left half of the brain hemisphere.

Despite emerging data on the neurobiological correlates of learning difficulties, controversy remains in recent studies about which processes are actually impaired (Bell et al., 2003:507).

#### 2.2.1.4 INTEGRATED BRAIN FUNCTION

Natchez (1968:89) refers to individual differences in integrated brain function as neuro-physiological factors. This refers to a person's individual learning style.

#### 2.2.1.5 ILLNESS

Illness can play a role in learning problems. The Herpes Simplex Virus (HSV) encephalitis may cause permanent learning disabilities due to damage to the temporal lobes (Van Schoor, Naudé, Van Rensburg, Pretorius & Boon, 2005:630). IQ test scores from the study by Van Schoor et al revealed marked impairment of the short-term memory, verbal memory, visual memory, visual scanning abilities and gestalt formation of study subjects.

According to Adeola (1994:22) pollution often causes health problems. Lead poisoning play an important role in children's' health and can cause brain damage (Wilson, 1996:236). Pollution weakens

the immunity system. It is especially young children that are vulnerable because their skins are thin and they engage in many hand-to-mouth activities.

## 2.2.2 Psychological theories

Learning, like all other human behaviour, is a function of the total personality (Fernald, 1943:165-172). According to Natchez (1968:317), psychological factors can have a positive or negative influence on learning. In the present section affection, stress and teachers' attitudes are discussed.

### 2.2.2.1 AFFECTION

Learning is not only influenced by people's attitudes, experiences and feelings about learning, but also by their feelings about themselves and success. How people feel about the content of what they are reading will exert an influence upon the choice of material, their understanding and even memory of what have been read. Feelings and attitudes appear to influence the learner's skill especially in critical reading (Natchez, 1968:317).

Emotional disturbance may lie at the bottom of a learning difficulty (Natchez, 1968:99). Bryant and Bradley (1985:14) support this opinion and add that the case may be visa versa, for instance when the child becomes aware of his/her failure. Children who reach the senior phase without overcoming their learning difficulties can suffer acute academic and personal defeat. Their repeated failure unleashes in them a flood of anger, anguish and torment (Natchez, 1968:375).

Battin-Pearson et al (2000:568) maintain that general deviance, deviant affiliation, school socialisation, poor family socialisation and structural strains lead to poor academic achievement in the early high school years.

When we read fiction, poetry or drama, we perceive selectively in accordance with our needs, goals, defences and values. Children with learning problems seem to be unusually vulnerable to confusion, perhaps because they had less depth and stability in their previous learning (Fernald, 1943:165-172; Natchez, 1968:321, 332, 400).

Fernald (1943:183), on the other hand, says that there seem to be no particular psychological problems involved in the failure to distinguish between two things that resemble each other closely, for example in the case of inversions, reversions and confusion of symbols.

#### 2.2.2.2 STRESS

For some individuals stress can propel motivation and success. For others, however, it may lead to failure and helplessness. It appears that learners with learning problems experience more stress than normal. Stress appears to be one of the main causes of learning problems. Stress in the intermediate phase seems to be caused by pressure from parents, teachers and dysfunctional home lives (World Health Organisation, 2000:11; Brand, Magyary, Hammond & Barnard, 1992:293; Bradley, Whiteside, Mundfrom, Casey, Kelleher & Pope, 1994:346).

#### 2.2.2.3 TEACHERS' ATTITUDES

Personal factors in the teacher's life can furthermore have an influence on the development of a learner's learning. The teacher's values, feelings about reading or learners' reading problems and attitude towards the reading material will affect the teaching process and consequently what the learners learn (Natchez, 1968:323; Jackson & Rothman, 2006:75).

### 2.2.3 Socio-demographic factors

Socio-demographic factors that can have an influence on learning could include gender, age, home life, single parenting, working parents, socio-economic level, race, multilingual societies and access to educational psychological services (Shapiro, et al, 1998:77; Zoller Booth, 1995:196; Bezuidenhout, 2002:270; Bridgemohan, 1996:94; Wilson, 1996:235; Aedola, 1994:99; Garrett, Ng'andu & Ferron, 1994: 332, 1994:333).

Other researchers back this argument up and claim that the home, inadequate and insufficient education seem to be important role players in the learning process (Bryant & Bradley, 1985:18; Marsh, 200:141; Bender & Coetzee, 1995:163).

#### 2.2.3.1 GENDER

Kronenberger (2001:422) says in conjunction that there are approximately two to five males with learning problems for every female. Gurian and Ballew (2003:9-11) support this opinion and point out inherent differences between boys' and girls' brains. These differences are on a developmental and structural, chemical and hormonal as well functional level. The different genders also seem to process emotion differently from one another.

#### 2.2.3.2 AGE

Learning problems can occur at any age (Blachman, 1997:243; Natchez, 1968:341).

According to a study by Elena Boder (Bryant & Bradley, 1985:101-103), the reading errors of dyslectic learners fall into three categories: The dysphonetic category, which is characterised by insensitivity to the sounds in words and reads globally. The Dyseidetic category is characterised by difficulty taking in and remembering the visual appearance of written words or making phonetic mistakes. Those who fell in the Mixed group category

made both kinds of errors. The Dysphonetic group accounted for 67 out of 100 children between the ages of 8 and 16 years, the Dyseidetic group 10 and the Mixed group 23.

#### 2.2.3.3 HOME LIFE

Learners' experiences help to determine which words are "easy" and which are "hard" (Bryant & Bradley, 1985:18; Marsh, 200:141; Bender & Coetzee, 1995:163). Knowledge of letters and numbers can also be a predictor of reading difficulty. Home determines how people feel about learning and how important it is to them (Natchez, 1968:375; Houck 1984:293, 296; Duttweiler & Smink, 1994:4;

#### 2.2.3.4 PARENTING

In light of the high divorce rates parents are often left as single parents, which requires of them to often play a double role – that of father and mother. Single parenting can be demanding and limits the time and energy of such parent. This may result in less help with homework or general stimulation of the child (Zoller Booth, 1995:196; Bezuidenhout, 2002:270; Lavoie, 2005:1).

Gender roles in parenting leave fathers and mothers with distinct and unique roles and expectations. When a child has a learning difficulty, it is often the mother that identifies the problem while the father often denies the existence of the problem. The father has to fix the problems, while the mother provides nurturance (Lavoie, 2005:1).

Bridgemohan (1996:24) points out the increasing number of working mothers. A few decades ago few mothers were working because traditionally fathers were the breadwinners. Mothers also return to work relatively shortly after giving birth. In contrast to this opinion, Clarke and Kurtz-Costes (1997:283) allege that there exist

no correlation between the fact that a mother is working and a child's cognitive development.

Because working parents often have insufficient time, attention and energy to devote to their children, learning problems may develop (Wilson, 1996:235; Aedola, 1994:99; Garrett et al, 1994: 332, 1994:333).

#### 2.2.3.5 SOCIO-ECONOMIC LEVEL

It appears that differences in socio-economic development are the most likely explanation of the differences in reading levels according to Lundberg (2002:186). Minority students from low socio-economic status families appear to be particularly at risk (Janosz, Le Blanc, Boulerice & Tremblay, 2000:171). Donahue, Finnegan, Lutkus, Allen & Campbell (2001:55) support this statement.

A number of researchers contradict this finding (Costeff & Kulikowski, 1996:52; Richter & Grieve, 1991:99) and claim that learning problems prevail in all levels of society.

#### 2.2.3.6 RACE

Only since recently literacy has started focusing on communities that are not white, middle class or native speakers of English. As a result, researchers cannot avail themselves of the fund of information on the values, beliefs and knowledge of literacy held by groups labelled by the majority culture as minorities (Jiménez, García & Pearson, 1996:90; Block, 1986:3; Casanave, 1988:5).

It appears that researchers differ on the influence that race has on learning. Donahue et al (2001:55) maintain that learning problems are especially prevalent amongst minority groups. This argument is supported by various researchers (Gauteng Department of Education, 1998:12-19; Mantzicopoulos & Neuharth-Pritchett, 1998:122; Jensen, undated: 1; Arnold & Beer, undated: 1).

According to Richter and Grieve (1991:88) a significant relationship exist between home environment and cognitive development of Black infants in impoverished South African families.

In 1994 the highest percentage of failures was white Americans (Edmunds, 1994:11). About forty percent of minority American Grade 4-learners cannot read at what The National Assessment of Educational Progress (NAEP) terms the "basic" level (Denton, Foorman & Mathes, 2003:5; Salinger, 2003:79; Labov, 2003:129).

In contrast, other researchers believe that ethnicity does not play a significant role in intellectual ability (Liang & Sugawara, 1996:75; Garrett et al, 1994:335).

#### 2.2.3.7 MULTILINGUAL SOCIETIES

Dealing with literacy in multilingual societies can also lead to learning problems. In heterogeneous linguistic situations explicit and precise knowledge is necessary to deal with learning problems (Labov, 2003:130; Lundberg, 2002:165).

Students speaking a language at home that is different from the instructional language, often face serious literacy problems in their additional language. Second language speakers often transfer the alphabetic rules from their 1<sup>st</sup> language to English (Labov, 2003:130; Beaumont, De Valenzuela & Trumbull, 2002:7).

In South Africa a large percentage of learners are taught in a second language, which is English. These learners are sometimes referred to as English language learners. Black Vernacular English (AAVE) is becoming increasingly differentiated from other dialects and is increasing in the number of variations (Baily, 1993:312; University of the Witwatersrand, 2003:3).

#### 2.2.3.8 ACCESS TO EDUCATIONAL PSYCHOLOGICAL SERVICES

There is a dire need for state employed educational psychologists in South Africa. The Office of the Premier agreed in a formal letter that Educational Psychological Services are relevant, but is not catered for by the Department (Limpopo Department of Education, 2006).

For the majority of people in South Africa, educational psychology is unaffordable, especially if they are not on a medical aid. Therefore, many state employed clinical psychologists adhere to the Code by providing services in order to not deny clients services (HPCSA, 2004:2). However, clinical psychologists focus on a different field of psychology and are not properly trained to deal with learning problems (HPCSA, 2002:1).

#### 2.2.4 Rapid automatised naming (RAN)

Blachman (1997:243) and Natchez (1968:341) stress that rapid automatised naming (RAN) could be a separate cause of reading problems. Inaccuracy in word recognition, and consequently not getting the meaning, is the major stumbling block among poor readers of all ages. These learners confuse, for instance, a word such as *casual* with *causal*.

Dyslexia is a learning problem marked by a severe difficulty in recognising and understanding written language, leading to spelling and writing problems (Bryant & Bradley, 1985:14-15). It is not caused by low intelligence or brain damage (Encarta, 1999:587).

Another question that arises is the differences between reading and spelling. Some children as well as adults often fail to read words properly, but can spell them with ease and visa versa. A possible reason for this is because spelling is a matter of reproduction, whilst reading is a matter of recognition (Bryant & Bradley, 1985:95).

Most comprehension difficulties seem to stem from word recognition difficulties (Natchez, 1968:307). This finding relates to Fernald's (1943:157) concept of inversions. Wolf (1999:3) further advocates that severe reading difficulties are more likely when people have core deficits in both phonological skills and rapid symbol naming and are doubly at risk for experiencing learning difficulties.

There seems to be a correlation between reading accuracy and comprehension (Madelaine & Wheldall, 1998:475). If comprehension problems are present, they are considered as secondary to problems with decoding (Padget et al, 1996:32).

According to a survey involving 549 kindergarten and first grade teachers, it appeared useful for children at risk if teachers display more positive attitudes toward explicit reading approaches that embody the teaching of phonemic awareness and phonics. The implications of these results for teacher training and future research are obvious. However, the extent to which the attitudes and knowledge enhance teacher-training efforts and eventually transfer to actual classroom practice awaits future validation (Bursuck, Munk, Nelson & Curran, 2002:5).

From the literature it appears as if many different factors can influence the learning process. Next, studies on assessment of learning problems will be investigated.

## **2.3 STUDIES ON ASSESSMENT OF LEARNING PROBLEMS**

Various assessment methods can be applied to assess learning problems. In fact, the number and variety of tests and assessment techniques are very large and increase continuously (Dick, 2001:265). A framework for classification can be most helpful when

deciding on a battery (Raggett, Tutt and Raggett, 1979:32; Bell et al, 2002:12).

Assessment challenges, guidelines for assessment, cognitive, perceptual and comprehensive measures, formal observations scales, behavioural and emotional testing as well as aspects of informal assessment will be included in the next discussion.

### 2.3.1 Assessment challenges

Equity assessment for English language learners remains one of the greatest challenges of educational reform according to various researchers. The complex interaction of language, culture, educational background and opportunities to learn make equitable, large-scale assessments particularly difficult to achieve (Figueroa, 1990:682; Garcia & Pearson, 1994:341; Solano-Flores & Nelson-Barber, 2001:568).

In South Africa, past apartheid policies impacted negatively on test development and use because separate tests were designed for different racial groups. This resulted into few tests that are available that have been designed and standardised for all South Africans (HPCSA, 2005:1).

Consequently, tests that were developed for White, westernised populations are used for other cultural groups. Even though norms are applied with caution, very few empirical studies have been undertaken into test bias, which leaves test users with insufficient empirical certainty about the validity, reliability and cultural appropriateness of these tests (HPCSA, 2005:1; Lipton, 1985: 2; Terreblanche, 2003:1; Whitaker, 1991:5).

There are generally limited resources for testing first language phonological skills or word reading proficiency among second language learners (Lundberg, 2002:165). As a result, English

language learners are often assessed through the same mechanisms as their English 1<sup>st</sup> language counterparts (Kapp, 1990:379).

Rourke (1991:77) as well as Prior (1996:101) emphasise the unreliability and validity of current neuro-psychological measures. A neuro-psychological test battery should provide information regarding problem solving, verbal ability, visual functioning, spelling, Mathematics, motivation, emotional factors, hand preference, brain wave activities, memory, attention span, language, comprehension, motor, psychomotor and senso-motor functioning.

When assessing learners that are experiencing learning problems, the reason why they cannot perform well, as well as why they are manifestly intelligent and capable and can cope perfectly well with activities that require no reading need to be investigated (Bryant & Bradley, 1985:13).

### 2.3.2 Guidelines for assessment

Questions about what information is wanted to guide instructional planning will naturally be reflected by one's conceptualisation of learning and the reading process, according to Houck (1984:297-298).

The dimensions of a suggested framework can be determined by objectives of the curriculum, approaches to collecting information on aspects of reading and levels of interpretation (Raggett et al, 1979:32). This opinion is supported by several other researchers. Reading problems should always be evaluated against the specific learning outcomes and assessment criteria (Bond, Tinker & Wasson, 1979:78; Du Toit, 1996:101).

Whenever possible, both standardised assessment measures and criterion-referenced measures should be engaged to obtain a full sampling of the child's abilities (Padget et al., 1996:55). From the qualitative and quantitative analysis of test results, the nature and extent of the problems can be established (Kapp: 1990:407). Decisions in diagnosis should be based on patterns of scores and diagnosis should be continuous (Bond et al, 1979:78; Du Toit, 1996:101). Problems in reading require tests for reading and intelligence level. A child's reading ability should roughly match his or her intelligence level (Lewkowicz, 2000:1).

Bender and Coetzee (1995:163) believe when assessing learning problems it might be necessary to look at the various components of the learning process. This could entail language use and development, ability in and the adequate development and acquisition of sensing, attending, perceiving, thinking, conceptualising, fantasising, memorising and study skills. Study skills refer to the ability to organise reading matter, tracing of information, reading flexibility, reading speed, scanning and speed reading.

At a minimum, the following reading skills should be assessed: sight identification of letters and words, nonsense word decoding, spelling and reading comprehension. It is important also to obtain a measure of reading fluency, either as part of the comprehension assessment or as a separate measure (Bell et al., 2003:510).

Lewkowicz (2000:1) identified several other guidelines for the assessment of learning problems. The general strategy in successful testing in preparation for intervention is to reveal a clear line of evidence from the difficulty in the classroom to difficulties in underlying skills to impairments in subcomponent skills or associated secondary cognitive skills to impairments in basic cognitive skills.

These findings support the need to assess auditory processing, visual processing, speed and memory as well as various types of reading skills, when making reading disability diagnoses. Until a diagnostic instrument can be refined and standardised, it is recommended that relevant subtests are used. Examples are auditory processing (e.g., sound-blending ability, phonological skills), visual processing speed (visual discrimination, rapid naming) and memory (both auditory and visual) (Lewkowicz, 2000:1).

Practitioners may wish to include two measures of each construct to avoid under-or over identifying deficits (McGrew & Flanagan, 1998). Unfortunately, no single test currently exists that provides two measures of skills such as auditory processing, visual processing speed and memory as well as reading skills (Bell et al., 2003:510)

Bond et al (1979:78) identified several general criteria for the diagnostic process of learning problems. Diagnosis should always be directed toward formulating methods of improvement. Diagnosis is more than appraisal of learning skills and abilities. It should be efficient, information from the cumulative records should be used and only pertinent information should be collected.

In contrast to the common practice of using one assessment measure for all people from diverse backgrounds, Beaumont et al (2002:241) created a new instrument for assessing learning. This instrument is referred to as Transitional Performance Based Assessment. Results of this study indicated that, while difficulties with language processing affected performance, the specific difficulties with vocabulary, syntax, spelling and text comprehension did not preclude engagement text or larger ideas (Beaumont et al., (2002:254).

It appears that most researchers prefer a person-centred approach to learning problems. Systematic identification of learning problems by means of a specific tool can optimise such a learner's learning and psychic life-actualisation (Bryant & Bradley, 1985:13). Learning should be seen through the eyes of the learner that experiences learning problems (Labov, 2003:129; 130).

### 2.3.3 Cognitive measures

Cognitive measures can be a successful tool for identifying learning problems. Diagnosis of any learning disability should include an intelligence test and an achievement test and more specific tests, including focused cognitive or neuro-psychological tests. This might entail administration of the Aptitude test for school beginners (ASB), visual-perceptual tests, auditory-perceptual tests and specific tests (Kronenberger, 2001:425; Bell et al., 2003:510; Fernald, 1943:69).

Research showed that analyses of certain cognitive variables (including auditory processing, phonological awareness, short-term auditory memory, visual memory, rapid automatized naming, and visual processing speed) produced three empirically and theoretically derived factors: auditory processing, visual processing/speed and memory.

Apparently auditory processing, speed and efficiency of visual processing and auditory and visual memory skills all contribute uniquely and significantly to success in letter-word calling, reading comprehension, spelling and decoding. Each factor seems to contribute to the prediction of reading and spelling skills (Bell et al., 2003:510).

#### 2.3.3.1 INTELLIGENCE TESTS

The first step in the assessment of a reading problem is to determine if the reading level is delayed in comparison to

intelligence. There are several different intelligence tests. The choice of which intelligence test to use should be informed by the suspected area of disability. That is, an intelligence test which allows for assessment in an area less affected by the suspected disability should be used. Otherwise, the estimate of intelligence will be contaminated by the disability and decision makers will be possibly caught in a dilemma of what is the level of a student's "real" intelligence (Lewkowicz, 2000:1)

The Wechsler series of intelligence tests and the Senior South African Scale-Revised (SSAIS-R) have two component scales which combine to make up the full scale IQ score: a verbal scale and non-verbal (performance) scale. The student with a language disability may score quite a bit lower on the verbal scale, thus lowering the overall full scale score. Performance on the verbal scale relies on auditory perception and performance on the non-verbal scale relies on visual perception (Brink, 2002: 2).

On the other hand, simply using the Comprehensive Test of Non-verbal Intelligence may substantially bypass the disability. Or, the Stanford Binet IV may allow providing credit for an answer the youngster has difficulty expressing, thereby providing a verbal intelligence score less dominated by expressive-language difficulties (Lewkowicz, 2000:1).

#### 2.3.3.2 INTERPRETATION OF INTELLIGENCE TESTS

The results of intelligent tests yield information about a small sample of an individual's functioning under very specific circumstances. The psychologist should therefore keep in mind that IQ is but only a reflection of intellectual performance at one given time (Lyman, 1991:10; Van Niekerk, 1990:82; Kapp: 1990:406; Kronenberger, 2001:425; Brink, 2002:1).

An intelligence test can also be a rich source of information about total personality. To use intelligence tests clinically, it is necessary to follow an approach that goes beyond classifying an individual according to one of three IQ scores. It requires that strengths and weaknesses are identified. Clinical history and emotional factors should be taken into consideration. This way, practical recommendations can be made towards remediation (Brink, 2002:1).

Research shows that intelligence scores should never be used alone to diagnose learning problems. The WISC-scales, also the SSAIS-R-scales, can be valuable in delineating the specific nature of a learning problem (Lyman, 1991:10; Van Niekerk, 1990:82; Kapp: 1990:406; Kronenberger, 2001:425).

A successive-level approach is recommended by various researchers when qualitatively interpreting IQ test scores (Kamphaus, 1993:20; Kaufman, 1994:12; Kramer, 1993:5; Naglieri, 1993:16; Sattler, 1992:55; Brink, 2002:13). This approach provides clinicians with a sequential, five-level format for working with and discussing a learner's performance.

Brink (2002:2) suggested seven successive steps similar to that described in Table 1. It consists of Interpretation of the total IQ score, Interpretation of the difference between the verbal and non-verbal scores, Interpretation of subtest profiles, Interpretation of individual subtest scores, Evaluation and integration of background information, Clinical observation and other data, Formulating of final hypotheses and recommendations.

**Table 1: Summary of successive procedures (adapted from Groth-Marnat, 1999:159)**

Level	Step
I	Interpreting the full scale
II	Interpret the verbal performance, factor scores and additional Groupings
A	Verbal performance IQ
B	Factor scores
C	Additional groupings
III	Interpret subtest variability
A	Significance of subtest fluctuations
B	Developing hypothesis related to the meaning of subtests fluctuation
C	Integrate subtest hypotheses with additional information
IV	Analyse intrasubtest variability
V	Conduct a qualitative analysis

Bannatyne's categories comprise subtest patterns (Groth-Marnat, 1999:159). Horn and Cattell distinguish between crystallised and fluid intelligence.

It has been claimed that performance subtests of the WAIS-R and WISC-III measure fluid intelligence. According to Brink (2002:14) the key in fluid intelligence is adaptation and flexibility when confronted with unfamiliar situations. She also refers to this process as conceptualisation. Fluid ability is indicated by performance on the Pattern Completion, Block Designs and Form Board subtests.

Crystallised intelligence can reflect the extent of a learner's accumulated knowledge (Groth-Marnat, 1999:140). According to Brink (2002:14) crystallised intelligence refers to intellectual functioning where an individual relies on previous training, education and cultural background. It is also referred to as acquired

knowledge. This ability is indicated by performance on the Vocabulary and Comprehension subtests.

Information processing approaches distinguish between sequential and simultaneous processing of information. Most information processing models include both structural (memory) and functional (processes) components. Examples of such models are the work of Campione and Brown (1987) and Sternberg (1985) (Groth-Marnat, 1999:142-143).

Brink (2002:1) believes in engaging an information processing model to interpret an intelligence test meaningfully. It has four basic components - Input, Integration, Storage and Output. Input refers to the perception of information via the sensory organs to enter the brain. Integration refers to the interpreting and processing of information. Storage refers to the storing of information for later retrieval, such as memory. Output refers to the expression of information via language or muscle activity.

According to Brink (2002:15) simultaneous processing is determined by the Missing Parts, Block Designs and Form Board subtests. These subtests measure a synthetic, integrative ability associated with the right cerebral hemisphere. In contrast, the Pattern Completion and Coding subtests measure sequential ability.

Although qualitative information can be useful in designing tailor-made remedial programmes, it should be realised that there is no way to entirely bypass a cognitive disability. However, once a learner's strengths and weaknesses are determined by means of an intelligence test, a customised remedial plan can be set up (Van Niekerk, 1986:21).

The brain functions as a unified organ and an injury in one location more or less affects the quality of thinking in all other areas. For

example, the difficulty in sequential reasoning and memory, which is common to language disorders, may affect the ability to reason constructing visual patterns (Van Niekerk, 1986:21).

#### 2.3.3.3 ACHIEVEMENT TESTS

Achievement tests are also referred to as performance tests, which are individually administered in addition to the intelligence test (Kronenberger, 2001:428). Achievement tests reveal information about a learner's reading comprehension, vocabulary, silent reading or speed, writing, spelling and mathematics. Age equivalents can normally be calculated.

A diagnostic test of word analysis skills should be given to pinpoint more specifically the learner's needs in word recognition (Natchez, 1968:332). Sometimes a standardised reading test is administered for pre- and post-intervention comparisons or for an understanding of the learner's performance. Selection of a test deserves considerable thought, with emphasis on the age of the learner (Houck, 1984:303).

The Test of Dyslexia (TOD) provides a psychometrically sound and comprehensive, yet concise, measure of all factors needed for a thorough assessment of reading disability. Components of reading and writing are built in, including sight identification of letters and words, reading comprehension, spelling and phonetic decoding (Bell et al., 2003:506).

#### 2.3.3.4 INTEGRATION OF INTELLIGENCE AND PERFORMANCE TESTS

Once the intelligence and achievement testing data are obtained, the results must be integrated into a formulation about the existence and nature of the learning problem. Several steps can facilitate this process: Selection of a comparison ability test score, identification of intelligence-achievement discrepancies, analysis of

subtest scores within the area of learning problems and explanation of residual deficits and discrepancies (Kronenberger, 2001:430-431).

The estimated intelligence can be used as a comparison for measuring the severity of delay in reading development. Traditional intelligence tests were developed to predict success in school and achievement test scales are almost always placed on a similar measurement scale so the numbers should match with only slight adjustments (Lewkowicz, 2000:1).

#### 2.3.3.5 TESTS FOR SCHOOL BEGINNERS

If the Aptitude Test for School Beginners (ASB) is administered individually, the learner's responses and style of work may be closely observed and evaluated. It is also useful for the initial identification of learners with a learning disability, especially if used in conjunction with other media (Kapp: 1990:406). The Junior South African Individual Scale (JSAIS) can also provide useful information about learning processes (Brink, 2002: 21).

#### 2.3.4 Perceptual measures

In the following discussion, a glance will be taken into visual and auditory perceptual tests.

##### 2.3.4.1 VISUAL PERCEPTUAL TESTS

These tests are used to identify visual dysfunctions of central (neural) origin, such as the Frostig Development Test of Visual Perception, the Beery Development Test of Visual-Motor Integration (Beery, 1989:9) and the Bender Gestalt Test for Visual-Motor Integration (BGVMI). The BGVMI is also useful for the identification of minimal brain dysfunction between the ages of 5 and 11 years (Koppitz, 1963:6).

According to the University of Zululand (2002:6) and HSRC (1991: 4-11) the SSAIS-R can be used to detect perceptual difficulties. The Pattern Completion subtest measures visual perception. The Block Designs subtest measures visual analysis and synthesis. The Form Board subtest also measures visual synthesis amongst other abilities.

#### 2.3.4.2 AUDITORY PERCEPTUAL TESTS

The Test for Auditory Figure/Background Discrimination, the Auditory Discrimination Test, the Goldman-Fristoe-Woodcock Auditory Skill Test Battery and the Pendulum Test for Auditory Perception are all examples of formal tests that measure dysfunction of central origin (Kapp: 1990:406; Hefer, 2002: 105,111).

The Similarities subtest of the SSAIS-R measures auditory association. The Story Memory subtest measures auditory sequential and short-term memory (University of Zululand, 2002:3, 5).

#### 2.3.5 Comprehensive measures

A number of researchers and practitioners make use of a battery of tests when assessing learning problems. Padget, Knight and Sawyer's operationalisation and the Woodcock-Johnson test of Cognitive abilities and test for Achievement will now be discussed.

##### 2.3.5.1 PADGET, KNIGHT & SAWYER'S OPERATIONALISATION

This method requires the use of a number of different subtests. A complete assessment can require five separate instruments such as intelligence, listening comprehension, reading comprehension, spelling and phonemic/phonological awareness. However, using several instruments can create the problem of comparisons across different standardisation samples, different examiners may choose

different instruments and/or constructs are not assessed in the same manner across different tests (Padget et al., 1996:55).

#### 2.3.5.2 WOODCOCK-JOHNSON TEST OF COGNITIVE ABILITIES AND TEST FOR ACHIEVEMENT

This appears to be the only instrument currently available that measures most of the components for assessing reading problems. However, many subtests not related to reading problems are also included (Bell et al., 2003:516).

#### 2.3.6 Formal observation scales

Various well-designed scales show excellent promise within a school context (Achenbach, 1987:478; Achenbach & Edelbrock, 1979:223; Mercer & Lewis, 1987:52, Sparrow, Balla & Cicchetti, 1984:23; Hogan, Quay, Vaughn & Shapiro, 1989:104; Quay & Peterson, 1987:10; Bryan & Bryan, 1978:279-281).

Examples of such scales are the Child Behaviour Checklist/Child Behaviour Profile, the Devereux Elementary School Behaviour Rating Scale, the Pupil Rating Scale and the Connor's Scale.

#### 2.3.7 Behavioural and emotional testing

The close interrelationship between learning problems and emotional problems makes it difficult to determine initially which phenomenon is primary and which is secondary. Orthopedagogic and orthodidactic assessment consequently forms an integral part of the investigation. Teachers who have some understanding of the emotions of these children have an invaluable professional asset (Natchez, 1968:375).

Projection techniques such as the Rorschach, Thematic Apperception Test (TAT), People's Apperception Test (CAT), the South Black Picture Analysis Test, the Columbus Series and drawings (tree, person, house and family) can be implemented to

identify emotional and behavioural problems. The BGVMI is also useful for the identification of emotional disturbances in children between the ages of 5 and 11 years (Koppitz, 1963:6).

Personality questionnaires such as the Personal, Home Social and Formal Relations Questionnaire (PHSF), People's Personality Questionnaire (CPQ), High School Personality Questionnaire (HSPQ) and the 16 Personality Factor Questionnaire (16PF) can be used to learn more about a learner's personality and emotional functioning. Self-concept scales, for example the Vrey's Adolescent Self-concept Test can also be administered (Kapp, 1990:408; Du Toit, 1996:84; Van Niekerk, 1986:224).

### 2.3.8 Informal assessment

In the case of informal assessment there are no official procedures for the administration and interpretation of data, however general guidelines should be followed (Du Toit, 1996:88).

#### 2.3.8.1 INFORMAL OBSERVATION

The teacher is normally the first to identify learning problems (Kapp, 1990:379). An observant teacher can collect much information and can formulate hypotheses, which can later be tested by direct assessment.

The teacher can observe what the learner does when given a task, if the learner spontaneously approaches reading material and what types. The teacher can also look out for whether the learner becomes attentive and is able to focus and sustain while reading, what unique or interfering mannerisms the learner exhibits during learning, what environmental expectations related to learning are being placed on the learner and how significant others react to his/her learning problems (Houck, 1984:299).

### 2.3.8.2 INFORMAL INTERVIEW

Before asking a learner to complete a reading task or test, it is necessary to establish rapport and to elicit thoughts concerning their reading problems and needs. This can be accomplished through a casual discussion or more structured interview. With careful planning of a low-stress environment, much information can result.

A conversation could include an explanation of what instructional services will be available, a discussion of the expectations of the teacher and the learner, an outline of what the teacher's, learner's and significant others' roles will be, an exploration of the learner's current attitude toward learning as well as reading habits and interests. The schedule for collecting additional data can also be discussed (Houck, 1984:300; Du Toit, 1996:88).

Du Toit (1996:88) and Van Niekerk (1986:217) refer to the intake interview psychologists use which should include information regarding help that a learner gets at home and at school. Groth-Marnat (1999:77) refers to the gathering of the history of the problem as the clinical interview.

### 2.3.8.3 INFORMAL READING INVENTORIES

According to Lerner (2001:367), the purpose of informal reading inventories is to determine the level at which a learner can read with no difficulty (the independent level), with some difficulty (the instructional level) and with considerable difficulty (the frustration level).

Essentially, reading inventories are frequently employed and consist of a series of unfamiliar graded passages along with generally four or five comprehension questions (Houck, 1984:300). Eye movements are a part of the bodily adjustments involved in

reading. Simple methods for observing eye movements are the mirror method and Miles-peephole method (Fernald, 1943:68).

Informal oral tests based on 100-word selections from three levels of basal readers are especially practical for the classroom teacher. Learners' errors can be recorded phonetically for diagnostic purposes (Natchez, 1968:343).

The Learning and Study Skills Inventory (LASSI) is a diagnostic tool to help identify areas in which learners might benefit most from educational interventions. It has been translated into more than 30 languages and is used by more than half of all colleges in the United States (Hewlett, 2000:135).

The Reading Miscue Inventory (RMI) is consistent with the psycholinguistic approach to reading, which examines the learner's strategies and level of comprehension. Emphasis is on qualitative assessment.

Each miscue must be analysed by asking nine questions: is a dialect involved in the miscue? Is there a shift in intonation? How much does the miscue look like what was expected (graphic similarity)? Is the grammatical function the same as that of the word in the text? Is the miscue corrected? Does it appear in a structure that is grammatically acceptable? Does it occur in a structure that is semantically acceptable? Does the miscue result in a change of meaning (Houck, 1984:301)?

By means of the close-technique the learner is presented with an unfamiliar passage in which every fifth word has been deleted and replaced with a blank space. The learner should supply an appropriate word, which meets the semantic and syntactic demands of the passage and sentence. If the learner is unable to supply 40%

of the exact responses, the selection or book is too difficult. Modified versions are available (Houck, 1984:300).

Error analysis by Goodman entails an analysis of mistakes and showed that very few mistakes can be attributed simply to visual or phonological confusions. According to Goodman one of the principal problems of beginning learners is that they do not understand how context can help and thus does not bother to make the interference (Bryant & Bradley, 1985:78-79).

#### 2.3.8.4 ONGOING ASSESSMENT IN THE CLASSROOM

Ongoing assessment can be seen as consisting of many elements, most of which will be heavily reliant on the observational skills of teachers. This process has enormous potential for yielding information that formal/objective tests cannot provide, but its relative emphasis on subjectivity and the constraints within which it necessarily operates makes it fraught with dangers, of which the teacher must be aware (Raggett et al., 1979:95).

When assessing learning problems, it may be fruitful if the psychologist liaises with the class teacher, either by means of a questionnaire or interview.

From the above discussion it appears that psychologists have a wide variety of tests to choose from when assessing learning problems. In South Africa there are a number of tests available that are standardised for South Africans, similar to tests used abroad. It seems that a qualitative approach to interpreting tests can provide rich information that can be used for designing intervention programmes.

## 2.4 STUDIES ON THE PROFILES OF LEARNERS WITH LEARNING PROBLEMS

Many studies have investigated the profiles of learners with learning problems (Hefer, 2005:1; Padget et al., 1996: 55). Children's achievement beliefs, strategies, family influences and their school performance and academic skills, form cumulative (Onatsu, Arvilommi & Nurmi, 2000) or self-perpetuating cycles (Groteluschen, Borkowski, & Hale, 1990; Salonen et al., 1998; Weiner, 1994; Aunola, Nurmi, Niemi, Lerkkanen & Rasku-Puttonen, 2002:8).

Results of failure to learn can relate to emotional instability, lack of visual and auditory perceptions, poor eye co-ordinations, failure to distinguish between similar stimuli, inversions, confusion of symbols etcetera (Fernald, 1943:176).

Learners with reading problems often also experience problems in most school subjects (Robinson, 1987:2; Grové & Hauptfleisch, 1979:1; Reid, Hresko & Swanson, 1991:27). It seems that learning problems primarily interferes with the acquisition of print literacy such as reading, writing and spelling (Padget et al, 1996:55; Goldberg & Schiffman, 1972:17; Bell et al, 2003:508).

A typical reading profile, IQ test profiles, subtle neurological disturbances, emotional and socio-economic characteristics, language and Scotopic Sensitivity Syndrome will be discussed next.

### 2.4.1 Reading profile

According to Fernald (1943:31), there are different forms of acquired dyslexia. A learner with deep dyslexia, for instance, cannot decipher nonsense words. Phonological dyslexia involves difficulties with the analysis of sounds but not to a severe extend, for example

reading weigh as weight. These learners rely strongly on the visual appearance of words and orthographic sequences.

Surface dyslexia differs sharply from the other two forms. Phonological skills seem in order, but they struggle with words that cannot be read with the letter-sound technique. An example would be to read *broad* as *brode* and they would muddle the meaning of homophones, for example *soar* and *saw*.

Fernald (1943:157) distinguishes between two main groups of disability based on the degree of the disability: total/extreme disability and partial disability.

In the case of extreme/total disability, 4 stages can be identified:

Stage I – the learner reads by tracing a word

Stage II – same as stage I, except that tracing is no longer necessary

Stage III – same as Stage II, except that the learner is able to learn from the printed word by merely looking at it and saying it to him/herself before writing it

Stage IV – the ability to recognise new words from their similarity to words or parts of words already learned (Fernald, 1943:35-51).

In the case of partial disability, it is important to distinguish between the types of difficulty: the learner who reads poorly because he/she is unable to recognise words in an ordinary paragraph and the learner who reads word by word - even when all the words in a given sentence can be recognised. Rate of reading, physiological adjustments and poor reading due to failure to comprehend content can play a role (Fernald, 1943:61).

Bryant and Bradley (1985:107-108) have the opinion that the learner depends too much on working out the meaning of a word

through rules about letter-sound relationships. The problem here is the mirror image of the phonological dyslexic.

Bryant and Bradley (1985:2-5) refer to dyslexic learners as backward readers, who perform worse on verbal tests than other learners. Bryant and Bradley also refer to dyslexic learners as children whose reading levels fall far below of what would have been predicted on other counts, such as their intelligence. Their number is uncomfortably large. A particular problem these learners experience is isolating sounds in words.

Backward readers find it difficult to read words in isolation or in the "list" formation, but do much better in a story (Bryant & Bradley, 1985:80).

Padget et al (1996:55) maintain that dyslexia is characterised by poor decoding and spelling abilities as well as deficits in phonological awareness and/ or phonological manipulation. These primary characteristics may co-occur with spoken language difficulties and deficits in short-term memory. Secondary characteristics may include poor reading comprehension (due to decoding and memory difficulties) and poor written expression, as well as difficulty organising information for study and retrieval.

According to Berninger (2001:31) dyslexia is characterised by uneven development between word reading and higher-level processes within the functional reading system.

Another classification system identifies people with no major problem as developmental readers (those with some, but not great difficulty as needing corrective reading) and those with severe reading problems - such as remedial cases/primary/specific reading problems (Houck, 1884:293).

According to Lerner (2001:367) the Independent reading level is where a learner can recognise about 95% of the words in a text and can answer 90% of the comprehension questions correctly and without help. Skills that should be demonstrated are rhythmic, expressive loud reading, correct decoding and punctuation. Silent reading should be quicker than loud reading. No use should be made of the finger or head and sub vocalising should not be present.

The Education level is the level at which a learner needs to be educated. In this case about 90% of the words can be recognised in the text and about 70% of the comprehension questions can be answered correctly. The Frustration level is where a learner can recognise less than 90% of the words in the text and can answer less than 70% of the comprehension questions correctly.

Symptoms of the Frustration level are very loud or soft reading, read word by word, read without expression, mistakes, read with finger, head movements and sub vocalising, signs of fatigue and refusal.

Typical reading mistakes learners make are incorrect pronunciation, omitting of words, add-ins, meaningful or meaningless substitution, repetition, sound reading and ignoring punctuation (Lerner, 2001:367).

According to a certain study, reading and writing problems emerged as the most predominant predictor of various literacy and cognitive deficits (Chan, Suk-Han Ho, Tsang, Lee & Chung, 2003:3). Secondary characteristics may include poor reading comprehension (due to decoding and memory difficulties), poor written expression as well as difficulty organising information for study and retrieval (Whiteley & Smith, 2001:30; Padget et al., 1996:55; 65).

Dyslexia is characterised by poor decoding and spelling abilities as well as deficits in phonological awareness and/or difficulties and deficits in short-term memory (Whiteley & Smith, 2001:30; Padget et al., 1996:55; 65).

Padget's diagnostic profile of dyslexia links up with this argument and describes in detail the relative performance levels of various cognitive and academic components. Listening comprehension, IQ, or both must be in the low-average range or higher. Reading scores must be lower than listening comprehension or IQ, with significant weaknesses in word recognition, spelling and word attack (decoding of nonsense words). Phonological awareness skills must be well below age expectations (Padget et al., 1996:55).

According to Bell et al (2003:12) learners with dyslexia will perform relatively poorly on cognitive tests of phonemic awareness, phonological skills, sound blending, rapid automatized naming, auditory memory, certain subtypes of visual memory, decoding of nonsense words, letter and word identification, spelling and fluency.

In contrast, they will typically perform relatively well on cognitive tests of verbal and non-verbal reasoning, visual-spatial abilities, reading and listening comprehension. However, reading comprehension can be compromised by weaker basic reading skills.

Those with reading difficulties often struggle to de-entangle the sounds in words and to break words up into sounds (Bryant & Bradley, 1985:69). They tend to struggle to work out what the next word is when they have to rely entirely on context, even when reading levels are controlled. They usually find it particularly difficult to read words in isolation or in the "list" condition, but do better in a story task. Dyslectic learners tend to struggle with maze tests e.g. *The horses/flower/talk lifted their ears* (Bryant & Bradley, 1985:81).

Another common problem for dyslectic learners is to perceive and retain a detailed image of a word. They also struggle to deal at any one time with many discriminations or associations that are not automatic. They struggle to single out the perceptual and associational elements basic to word recognition on their own. The fact that dyslectic learners cannot deal at any one time with many discriminations or associations that are not automatic is probably a major reason for failure of remediation. Even three-letter words can cause confusion (Natchez, 1968:397; 399).

Vowels can look somewhat alike and are often used interchangeably by dyslectic learners. Complicating the situation is the fact that every vowel has other vowels. This is a major stumbling block for dyslectic learners because it is a basic perceptual-associational element of even simple reading (Natchez, 1968:400).

Dyslectic learners often have poor memory-specifically for reading material (Natchez, 1968:403). Inversions, reversions and confusion of symbols or problems are common in both reading and writing. Letters like *b* and *d*, words such as *was* and *saw*, words having a similar general form such as *where* and *when* are frequently mistaken for each other and are called inversions. Tendencies to reverse letters, parts of words or whole words are called mirror reading (Fernald, 1943:157).

**Table 2: A simplified table of word analysis skills**  
 (Natchez, 1968:343)

<b>READING LEVEL</b>	<b>WORD ANALYSIS SKILLS</b>
Readiness	Auditory discrimination, hearing rhymes & beginning sounds
Primer to high	Consonant sounds, discrimination and associating sounds with letters
1st reader	Simple word families eg. and; ake; it; an Endings eg. s; ed; ing Very simple compounds eg. something; into
High 1st	Consonant blends eg. ch, st, sh
Low 2nd to high 2nd	Short vowels eg. ly; er; est
High 2nd to low 3rd	Long vowels; rule of silent e; vowel combination
High 3rd to high 4th	Syllabication

Houck (1984:295) furthermore distinguish between auditory and visual learning problems. Auditory learning problems is characterised by auditory discrimination and perception problems, auditory analysis and synthesis difficulties, difficulty re-auditorising sounds of words, auditory sequencing problems and preference for visual tasks (Table 3).

**Table 3: *Visual and auditory learning problems***  
 (Houck, 1984:295)

<b>VISUAL LEARNING PROBLEMS</b>	<b>AUDITORY LEARNING PROBLEMS</b>
1. Visual discrimination difficulties	1. Auditory discrimination and perception problems
2. Slow rate of perception	2. Auditory analysis and synthesis difficulties
3. Reversal tendencies	3. Difficulty re-auditorising sounds of words
4. Inversion tendencies	4. Auditory sequencing problems
5. Problems with visual retention of sequences	5. Preference for visual tasks
6. Visual memory deficits	
7. Inferior drawings and lack of details	
8. Problems with visual analysis and synthesis	
9. Marked difference between performance on visual and auditory tasks with particular problems on visual memory and coding tasks	
10. Preference for auditory tasks	
11. Difficulties with visual-motor tasks such as games and sports	

#### 2.4.2 IQ test profiles

Certain patterns of subscale scores of intelligence tests tend to be characteristic of learning problems (Kronenberger, 2001:425). The four most difficult subtests appear to be the Arithmetic, Coding, Information and Digit-Span subtests (ACID-profile). Low scores on the ACID profile are considered to be typical of learning disabilities.

The Verbal Comprehension (VC) subtest scores are generally in the middle of the range. By definition, children with learning disabilities score in the average range (90-109) on the Full Scale (Natchez, 1968:413). They tend to have higher non-verbal IQ scores than verbal IQ scores (Kronenberger, 2001:425-426) and can exhibit a difference between their verbal and non-verbal scores (Groth-Marnat, 1999:160).

In fact, many learners with learning problems have a difference of 12 or more between their verbal and non-verbal scaled scores. This can be regarded as possibly significant (Groth-Marnat, 1999:159). Brink (2002:2) regards a difference of 15 as significant. In both cases, the underlying reasons for this difference should be investigated further and could relate to a variety of factors, such as educational background or socio-economic status.

Subtest scatter is the difference between the highest and lowest subtest scores. Most subtests have a mean score of 10. Most children will score + or - 3 points away from the mean of 10. Thus, most children will score between 7 and 13. The spread or variability between the subtest scores is called subtest scatter (Wright & Darr Wright, 2000:34).

This perception is supported by Brink (2002:13), however, according to her a difference of + or - 4 points is applicable to the Digit Span and Story Memory subtests. A difference of + or - 5 points is applicable to the Form Board and Coding subtests.

Brink (2002:15) states that many children with learning disabilities possess good simultaneous, but poor sequential processing skills. This might affect their ability to evaluate, organise and plan their work.

A learner may attempt to sequentially think through the steps of a complex problem rather than rely on the innate intuition which might be sufficient for a simple problem. It is just that the "spatial" problems rely less on language or sequential processing skills than expressive-language tasks or other verbal tasks. Any specific test places more or less demand on particular skills but can never be assumed to be totally free of influence from a particular disability (Lewkowicz, 2000:1).

### 2.4.3 Subtle neurological disturbances

According to Berninger (2001:31) the brains of learners with dyslexia perform differently from those of individuals without dyslexia when reading. A further distinction can perhaps be made based on the severity of the problems: those with obvious brain injury and those with an observable anomaly, but just a subtle neurological disturbance (Houck, 1884:293).

Supporting this belief, learners with a subtle neurological disturbance might demonstrate average or above average intelligence, a left-handed preference or ambidexterity, persistent reversals of symbols and words, inattentiveness to distinctive visual or auditory word features, comprehension problems despite word recognition and emotional problems associated with the reading failure (Goldberg & Schiffman, 1972:17). Natchez (1968:413) supports the opinion that attention span appears brief and adds that these learners' interests tend to be tenuous and capricious. Their concept of time and place are vague.

Associated characteristics are deficits in attention, sequential processing of the features of a word, failure to focus on syntactic and semantic cues, difficulty with auditory fusion and discrimination of successive acoustical events. Other characteristics are an inability to integrate visual stimuli, eye-movement patterns, inefficient visual memory, inefficiency regarding specific comprehension questions,

modality preference, little benefit from auditory or visual training and continued differences in verbal-cognitive skills (Houck, 1984:296).

Fernald (1943:176) adds to this lack of visual and auditory perception, poor eye co-ordination, failure to distinguish between similar stimuli, inversions, confusion of symbols etc.

#### 2.4.4 Emotional characteristics

According to Van Wyk (as quoted in Kapp, 1990:5) learning problems have different effects on children, particularly on self-confidence and self-esteem. Children tend to evaluate themselves as inadequate if they repeatedly fail and especially because *significant others* are aware of the problem. If they do not receive help in time, emotional problems can worsen and they may become overly sensitive to criticism and reprimands, which may cause emotional instability (Fernald, 1943:176).

#### 2.4.5. Socio-demographic characteristics

Interviewing and testing reveals that the socially deprived learner exhibit a certain profile. Their experience and background seem narrow and therefore auditory discrimination for sounds and words appear weak. Their sight vocabulary appears inadequate. These learners lean heavily on concrete words and knowledge of word analysis skills is nonexistent or rudimentary. Understandably, it is not easy for the socially deprived learner to learn. Socially deprived learners often look undernourished, often seem tired and sleepy (Natchez, 1968:413; Rourke, 1991:60).

#### 2.4.6 Language

According to Beaumont et al (2002:7), a learner that struggles with reading typically exhibits transitional language features. These features include phonological and syntactical evidence of first language influence, semantic confusion, limited vocabulary and

limited variety in sentence structure. This opinion is supported by University of the Witwatersrand (2002:3) and Bezuidenhout (2002:84).

#### 2.4.7 Eye functioning

Many researchers have pointed out the link between eye functioning and learning problems (Natchez, 1968:412; 1943:158-163; Engelbrecht, 2000:55; Fernald, 1943:89; Houck, 1984:296; Whiteley & Smith, 2001:33; Scheiman, 1994:63).

Specific eye conditions include farsightedness, nearsightedness, astigmatism and muscles (Fernald, 1943:61). This finding is supported by Whiteley and Smith (2001:33), which refer to anomalies in visual pathways from the eye to the brain.

Helen Irlen (1991:52) describes in her book a visual-perceptual processing deficit caused by sensitivity to specific wavelengths of the white-light spectrum, which she termed Scotopic Sensitivity Syndrome (SSS). Irlen describes typical symptoms of the syndrome, which include light sensitivity, poor depth perception, strain and fatigue when reading, attention deficit, contrast and colour sensitivity, restricted visual span, inefficient reading and distortions of print.

Although learners with learning problems seem to have similar general traits, it appears that profiles can vary from individual to individual. It seems that a large number of these learners have reading problems. Setting up a typical profile is further complicated by controversy among researchers about definitions of terms and about which traits are prominent (Siegel, 1999:304).

## 2.4 CONCLUSION

Dealing with learning problems requires a dynamic approach. The use of intelligence testing is increasingly playing a more prominent role in the assessment of learning problems in South Africa. A closer look will be taken into the association between learning problems, SSAIS-R scores, demographic factors, clinical observations and history.

In the following chapter, the research design will be outlined and the research will be conducted.

## **CHAPTER 3**

### **RESEARCH DESIGN**

#### **3.1 INTRODUCTION**

In the previous chapters, the focus has been on the concept learning problems, aetiology, assessment and profiles of learners with learning problems.

In this chapter, the research design will be outlined. Information regarding learners with learning problems will be gathered from existing client files. The information that will be gathered will entail demographic information, SSAIS-R scores, clinical observation and history. The relationships between these variables and their association to the learning process will be examined.

#### **3.2 AIMS OF THE STUDY**

The aims of the study are:

- 3.2.1 To determine the association between learning problems and demographic factors.
- 3.2.2 To examine the assessment of learning problems.
- 3.2.3 To describe the profiles of learners with learning problems.

### 3.3 METHODOLOGY

The method of investigation will cover aspects of the study population and design, the study sample, the pilot study, data collection and data analysis.

#### 3.3.1 Study population and design

The study population will include primary and secondary school learners younger than 18 years confirmed to have learning problems at four private practices in psychology. The study will cover data from assessments done between 1 January 2003 to 31 December 2004.

Two of the CEO's of the practices will be educational psychologists and the other two clinical psychologists. The reason for including *clinical psychology practices in the present study is twofold: there is a lack of access to educational psychology and many clinical psychologists deal with learning problems in South Africa.*

The method of investigation will entail a retrospective records review of primary and secondary school learners with reading problems. There will be a retrospective review of records to identify groups of subjects with the disorder, then look backward in time to find predictor variables that may explain what caused the subject to develop the disorder (Hulley & Cummings, 1988:78).

Once predictor variables that may explain what caused the subject to develop the disorder are identified, accountable statements and motivated recommendations could be made towards primary prevention and more effective remedial intervention, especially with regard to the South African context.

### 3.3.2 Study sample

One hundred and thirteen primary and secondary school learners with reading problems, who were assessed at various private practices of psychology in the Limpopo Province between 1 January 2003 and 31 December 2004, will be selected from a database of over 1000 learners (Marshall & Rossman, 1995: 33; Patton, 1990:169).

The sample size will be determined by using this formula (De Wet, De K Monteith, Venter & Steyn, 1981:117):

$$n = \frac{z^2(pq)}{d^2}$$

where:

n = sample size

z = 1.96 (a confidence level of 95% was used)

p = assumed proportion of client with learning problems = 8%

q = 1-p

d = maximum sampling error allowed in the research and was taken to be 0.05

#### Substitution of the formula:

$$n = \frac{z^2(pq)}{d^2}$$

$$n = \frac{(1.96)^2 \times (0.08 \times 0.92)}{(0.05)^2}$$

$$n = \frac{3.8416 \times 0.0736}{0.0025}$$

$$n = \frac{0.28274176}{0.0025}$$

$$n = 113.0$$

#### Inclusion criteria:

A sample homogenous with the characteristics being measured will be selected (Marshall & Rossman, 1995: 33; Patton, 1990:169;

Jiménez et al., 1996:95). The procedure where respondents and situations are chosen that are rich in information, is called extreme or deviant sampling (De Vos, 1998:255; Bezuidenhout, 2002:188).

Primary and secondary school learners younger than eighteen confirmed to have learning problems at the various private practices will be included in the study. Learners with learning problems (a learning disability) score at least in the average range (90-109) on the full scale, but their scholastic achievement does not correlate with their intellectual ability given their chronological age and age-appropriate education.

### 3.3.3 Pilot Study

An abstraction form will be piloted from 5 patients. The CEO's of the practices will be informed about the study. Following piloting, the field worker will inform the researcher of her experience and appropriate corrections to the instrument logistics will be made accordingly. The research assistant will attend training for 5 days.

### 3.3.4 Data collection

The data will be collected from four private practices in the Limpopo Province, between April and July 2005. Client records will be retrieved and reviewed by the researcher and a trained research assistant, using a detailed abstract form (Appendix A).

The demographic factors of the study participants will be examined. Focus will be on the nature of the association between learning problems, demographic factors, SSAIS-R scores, clinical observation and history. The relative impact of these variables to predict learning skills will then be examined.

Psychological test score will be obtained from the Senior South-African Individual Scale-Revised (SSAIS-R) or Individual Scale for

Northern Sotho-Speaking Pupils (NSAIS). Psychologists in South Africa commonly administer these tests.

The SSAIS-R and NSAIS are revised versions of the SSAIS that was released in 1964. The test is available in most of the official languages in South Africa. It is an intelligence test and is standardised for learners between the ages of 5 years 0 months and 17 years 11 months. The test consists of a verbal and a non-verbal category. The verbal category is divided into 6 subtests and the non-verbal category in 5 subtests. Additional subtests are Memory for Digits, Coding and Mazes.

By administering the test, a differentiated profile will be obtained regarding specific cognitive abilities of a learner. Firstly, a general intelligence range will be obtained as predictor of scholastic achievement. Secondly, relative strengths and weaknesses in terms of intelligence will be assessed in order to obtain diagnostic and prognostic information (HSRC, 1991:1-4).

Information will also be obtained from observations of clients and supporting documents at the four private practices. Existing client files will be rich sources of information in this case, with specific reference to demographic information. The types of demographic information that will be extracted from client files include emotional problems, gender, race, developmental delays and age.

### 3.3.5 Data analysis

Analysis of the collected data will be done in several stages. Firstly, a descriptive univariate analysis will be conducted to describe study participants. Then a bivariate analysis will be conducted using students' t-test and ANOVA (test association between two continuous variables). A P-value smaller than 0.05 will be

considered as statistically significant. The data will be entered into EpiInfo 2002 and analysed in STATA version 7.

### **3.4 ETHICAL CONSIDERATIONS**

Permission to conduct the research will be sought from the various CEO's of the private practices. Because the present study is a retrospective records review, written informed consent of parents will not be necessary to include their children's information in the study.

No patients will be identified by name in any report or published as a result from the study. A unique study identification number will identify each questionnaire. Paper questionnaires including patients' identifying information will be kept in a locked file cabinet at the various practices. Data stored electronically will not include any patient identifiers, only the unique ID assigned to each questionnaire. Only study personnel will have access to the data files.

### **3.5 CONCLUSION**

In this chapter, the design of the research has been set out. Certain information regarding primary and secondary school learners with reading problems was gathered from existing client files, by means of a retrospective review of record. The association between variables was examined. The data was analysis and interpreted.

## CHAPTER 4

### RESULTS OF THE STUDY

#### 4.1 INTRODUCTION

In the previous chapter, the research design was outlined and the research was conducted. Information regarding learners with learning problems was gathered from existing client files at four practices in the Limpopo Province. The information that was gathered entailed demographic information, SSAIS-R scores, clinical observation and history. The association between these variables in relation to learning problems are analysed in the present chapter.

#### 4.2 RESULTS OF THE STUDY

Table 4.1 shows the Demographic characteristics of the study subjects. Table 4.2 presents Additional characteristics of the study subjects. Table 4.3 presents Subtest scatter on the SSAIS-R. Table 5 presents Developmental delays by selected demographics. Table 6 shows Developmental delays by verbal IQ test score and Table 7 shows Developmental delays by non-verbal IQ test score.

Figure 1 presents the Difference between verbal and non-verbal scores bigger than 15. Fluid (innate) intelligence (Figure 2) is indicated by the Block Designs, Form Board and Pattern Completion subtests. Crystallised (acquired) intelligence (Figure 3) is indicated by the Vocabulary, Comprehension and Similarities subtests. A Simultaneous

cognitive processing style (Figure 4) is indicated by the Missing Parts, Block Designs and Form Board subtests. A Sequential processing style (Figure 5) is indicated by the Pattern Completion and Coding subtests.

Table 4.1: *Demographic characteristics of the study sample, n=94*

Variable	No.	%
<b>Gender</b>		
Female	29	31
Male	65	69
<b>Race</b>		
Black	42	45
White	51	54
Coloured	1	1
<b>Age (mean ± SD)</b>		
≤8	14	15
9-11	33	35
12-14	34	36
15-17	13	14
<b>Phase</b>		
Foundation	27	29
Intermediate	44	47
Senior	19	4
FET	4	4

Table 4.1 displays the Demographic information of the study population. A total of 94 psychological records were reviewed for the study. Sixty-nine percent of the study subjects were males. About fifty-four percent of the subjects were White, 45% were Black and 1% were Coloured.

The mean age of the subjects was 11 years (range: 6 to 17 years). Thirty-six percent of the subjects were aged 12-14 years, 35% were 9-11 years, 14% were aged 15-17, and 15% were eight years or

younger. About 47% of the subjects were in the intermediate phase, 29% were in the foundation phase and 8% were in the senior and FET phases.

Table 4.2: *Additional characteristics of the study sample, n=94*

Variable	No.	%
<b>Emotional Indicators</b>		
Yes	82	87
No	12	13
<b>Developmental Delay</b>		
Yes	47	50
No	47	50
<b>First Language Tuition</b>		
Yes	74	79
No	20	21
<b>Non-Verbal &gt; Verbal IQ</b>		
Yes	57	61
No	37	39
<b>Comprehension subtest average score</b>		
Yes	81	86
No	13	14
<b>Auditory perceptual problems: Similarities</b>		
Yes	26	28
No	68	72
<b>Auditory perceptual problems: Story Memory</b>		
Yes	30	32
No	64	68
<b>Visual perceptual problems: Pattern Completion</b>		
Yes	12	13
No	82	87
<b>Visual perceptual problems: Block Design</b>		
Yes	24	26
No	70	74
<b>Visual perceptual problems: Form Board</b>		
Yes	29	31
No	65	69

Table 4.2 displays Additional characteristic of the study subjects. Eighty-seven percent of the study subjects showed emotional indicators. About fifty percent presented with developmental delays. Seventy-nine percent of the subjects were taught in their first language. Sixty-one percent had a non-verbal score higher than the verbal score. Eighty-six percent of the study participants achieved at least at an average level in terms of the Comprehension subtest.

Regarding auditory perception (as derived from the SSAIS-R), about 28% of the study subjects performed below the average in terms of the Similarities subtest and 32% performed below the average in terms of the Story Memory subtest.

Regarding visual perception (as derived from the SSAIS-R), about 13% of the study subjects performed below average in terms of the Pattern Completion subtest, 26% performed below average in terms of the Block Designs subtest and about 31% performed below average in terms of the Form Board subtest.

Table 4.3: *Subtest scatter on the SSAIS-R of the study sample, n=94*

	No.	%
<b>Verbal scale</b>		
≤7	10	11
8-12	81	86
≥13	3	3
<b>Non-verbal scale</b>		
≤7	9	10
8-12	72	83
≥13	6	7

Table 4.3 displays Subtest scatter on the SSAIS-R. Eleven percent of the study subjects had a difference of  $\leq 7$  and 3% had a difference of  $\geq 13$  on the verbal scale. On the non-verbal scale, 10% of the study participants had a difference of  $\leq 7$  and 7% had difference of  $\geq 13$ .

**Table 5: Developmental delays by selected demographics, n=94**

Variable	Developmental Delays				p-value
	Yes		No		
	No.	%	No.	%	
<b>Gender:</b> Male	35	74	30	64	0.186
Female	12	26	17	36	
<b>Race:</b> Black	22	47	21	45	0.836
White	25	53	26	55	

Table 5 shows the association between selected Demographic information and developmental delays. Race and gender were statistically not significant - ( $p=0.836$ ) and ( $p=0.186$ ), respectively.

About seventy-four percent of study subjects with developmental delays appeared to be male. Black study subjects made up 47% of the study population and White study subjects made up 53%.

Table 6: *Developmental delays by verbal IQ test score, n=94*

Variable	Develop. Delays	Mean	Std Deviation	95% CI	p-value
Vocabulary	Yes	9.87	2.88	(9.03, 10.72)	0.6691
	No	10.13	2.89	(9.28, 10.98)	
Comprehension	Yes	10.1	3.76	(8.96, 11.17)	0.7081
	No	10.3	2.75	(9.51, 11.13)	
Similarities	Yes	8.3	3.22	(7.33, 9.22)	<b>0.0104</b>
	No	9.9	2.84	(9.08, 10.75)	
Number Problems	Yes	7.3	3.33	(6.33, 8.29)	<b>0.0228</b>
	No	8.9	3.51	(7.92, 9.99)	
Story Memory	Yes	8.6	3.14	(7.65, 9.49)	0.4919
	No	9.1	3.14	(8.09, 9.44)	

In Table 6 the presence of Developmental delays in association with verbal IQ test scores are displayed. From the results it appears that differences between study subjects regarding the presence of developmental delays in terms of the Vocabulary, Comprehension and Story Memory subtests can be considered as statistically insignificant - ( $p=0.6699$ ), ( $p=0.7081$ ) and ( $p=0.4919$ ), respectively. In terms of the Similarities and Number Problems subtests, differences seem to be statistically significant - ( $p=0.0104$ ) and ( $p=0.0228$ ), respectively.

**Table 7: Developmental delays by non-verbal IQ test score, n=94**

<b>Variable</b>	<b>Develop. Delays</b>	<b>Mean</b>	<b>Std Deviation</b>	<b>95% CI</b>	<b>p-value</b>
<b>Pattern Completion</b>	Yes	9.7	3.22	(8.77, 10.69)	<b>0.0427</b>
	No	11.2	3.62	(10.12, 12.35)	
<b>Block Design</b>	Yes	8.4	2.79	(7.57, 9.20)	<b>0.0001</b>
	No	10.8	2.59	(9.98, 11.51)	
<b>Missing Parts</b>	Yes	8.5	3.39	(7.47, 9.46)	<b>0.0020</b>
	No	10.5	2.59	(9.66, 11.20)	
<b>Form Board</b>	Yes	8.5	3.13	(7.57, 9.41)	0.2225
	No	9.3	3.43	(8.31, 10.35)	

In Table 7 the presence of Developmental delays in association with non-verbal IQ test scores are described. From the results it appears that differences between study subjects regarding the presence of developmental delays in terms of the Form Board subtest can be considered as statistically insignificant - (p=0.2225).

In terms of the Pattern Completion, Block Designs and Missing Parts subtests differences seem to be significant - (p=0.0427), (p=0.0001) and (p=0.0020), respectively.

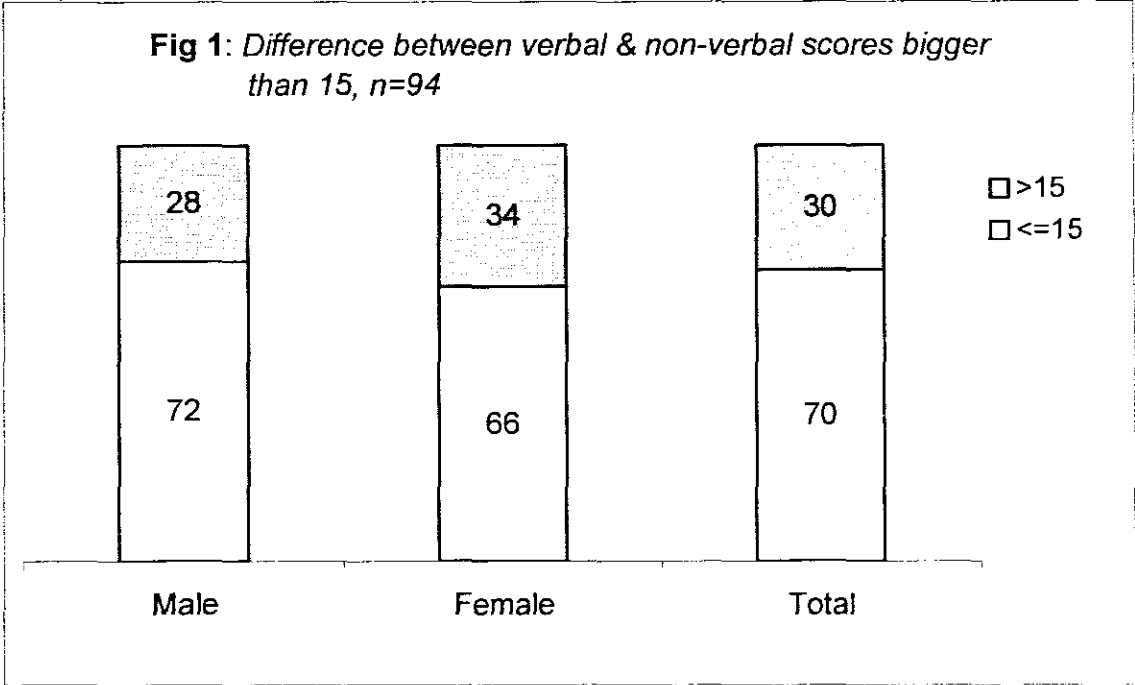


Figure 1 shows the Difference between verbal and non-verbal scores bigger than 15 of the 94 subjects in the study. Sixty-six percent (19) females scored  $\leq 15$  and 34% (10) scored  $>15$ . About 72% (47) of males scored  $\leq 15$  and 28% (18) scored  $>15$ . Overall, 70% (66) of the subjects had a difference between verbal and non-verbal score of  $\leq 15$  and 30% (28) scored  $>15$ .

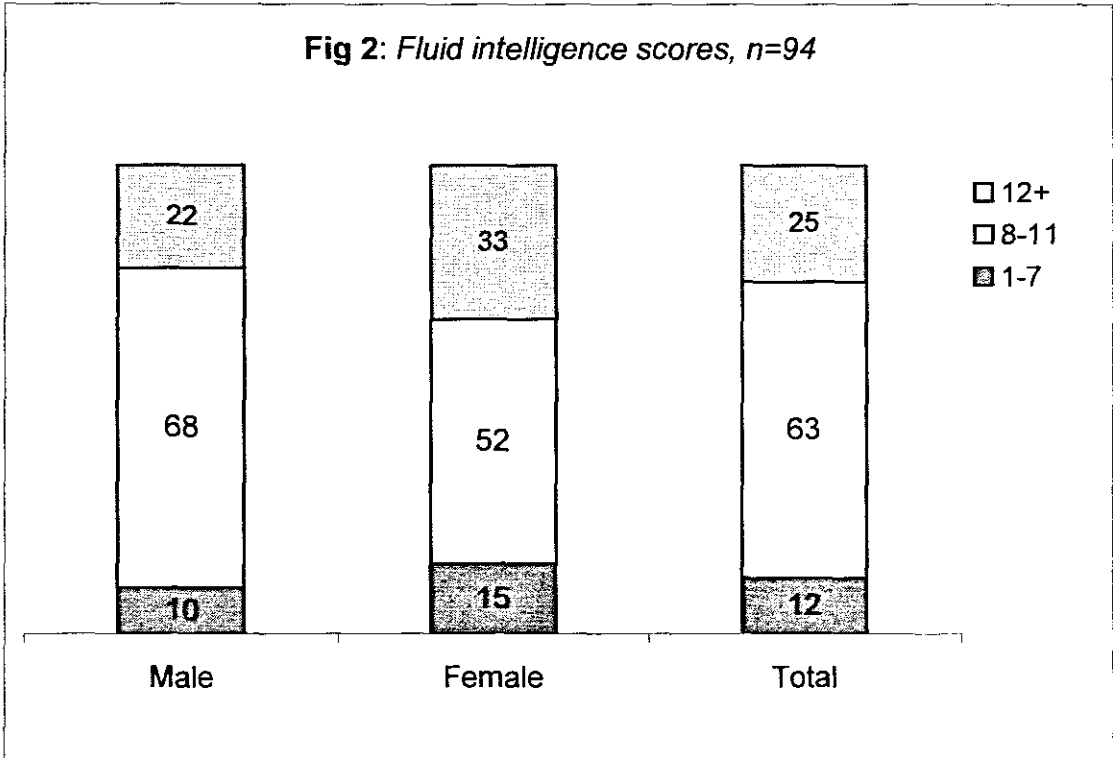


Figure 2 shows the Fluid intelligence scores of the 94 subjects in the study. Fluid intelligence was determined from performance on the Pattern Completion, Block Designs and Form Board subtests. According to the results it appears that 10% of males performed at a below average level, 68.33% at an average level and 21.67% at a superior level.

In terms of females, 14.81% performed at a below average level, 51.85% performed at an average level and 33.33% performed at a superior level. In summary, 11.49% of all study subjects performed in the below average level, 63.22% at an average level and 25.29% at a superior level.

Fig 3: Crystallised intelligence scores, n=94

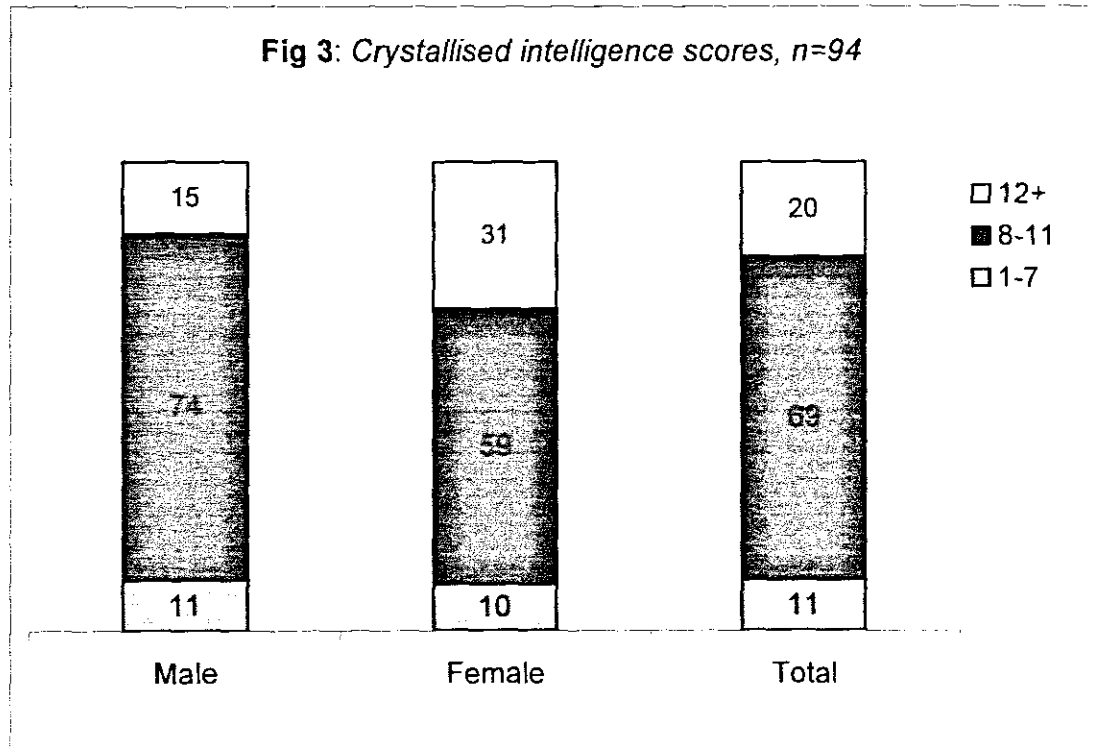


Figure 3 shows the Crystallised intelligence scores of the 94 subjects in the study. Crystallised intelligence was determined from the Vocabulary and Comprehension subtests. From the results it appears that 10.77% of males performed at a below average level, 73.85% performed at an average level and 15.38% performed at a superior level.

In terms of females, 10.34% performed at a below average level, 58.62% performed at an average level and 31.03% performed at a superior level. In summary, 10.64% of all study subjects performed in the below average level, 69.15% at an average level and 20.21% at a superior level.

Fig 4: Simultaneous processing scores, n=94

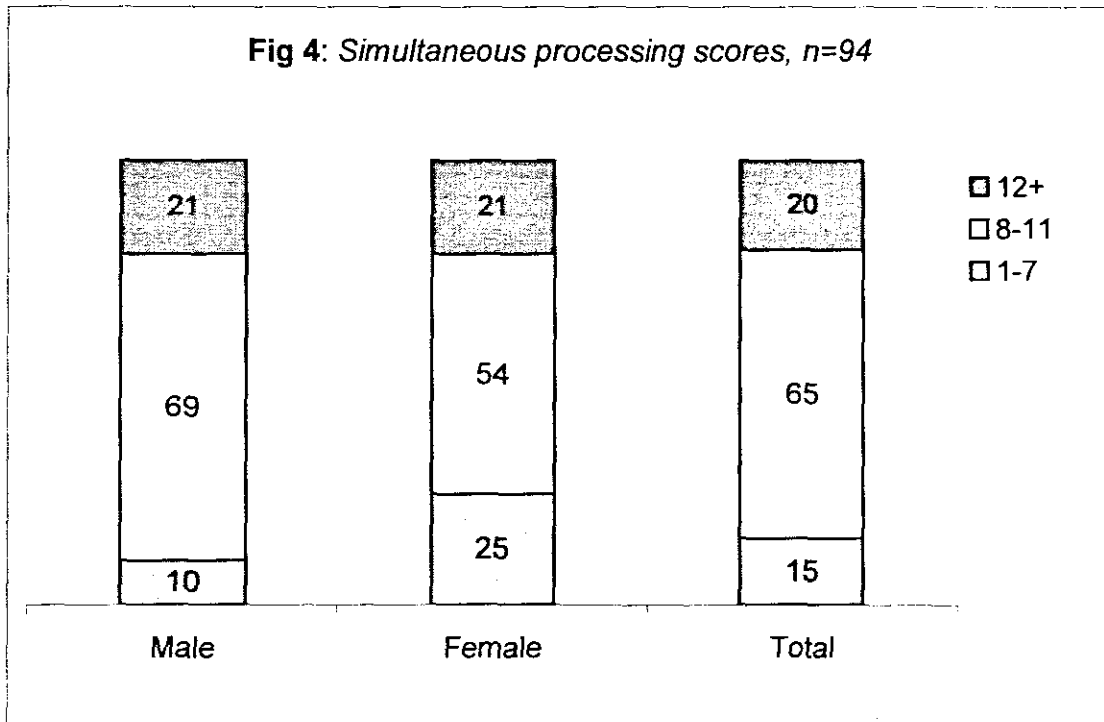


Figure 4 shows the Simultaneous intelligence scores of the 94 subjects in the study. Simultaneous processing was determined from the Missing Parts, Block Designs and Form Board subtests. From the results it appears that 10.77% of males performed at a below average level, 69.23% performed at an average level and 21.43% performed at a superior level.

In terms of females, 25% performed at a below average level, 53.57% performed at an average level and 20% performed at a superior level. In summary, 15.05% of all study subjects performed in the below average level, 64.52% at an average level and 20.43% at a superior level.

Fig 5: Sequential processing scores, n=94

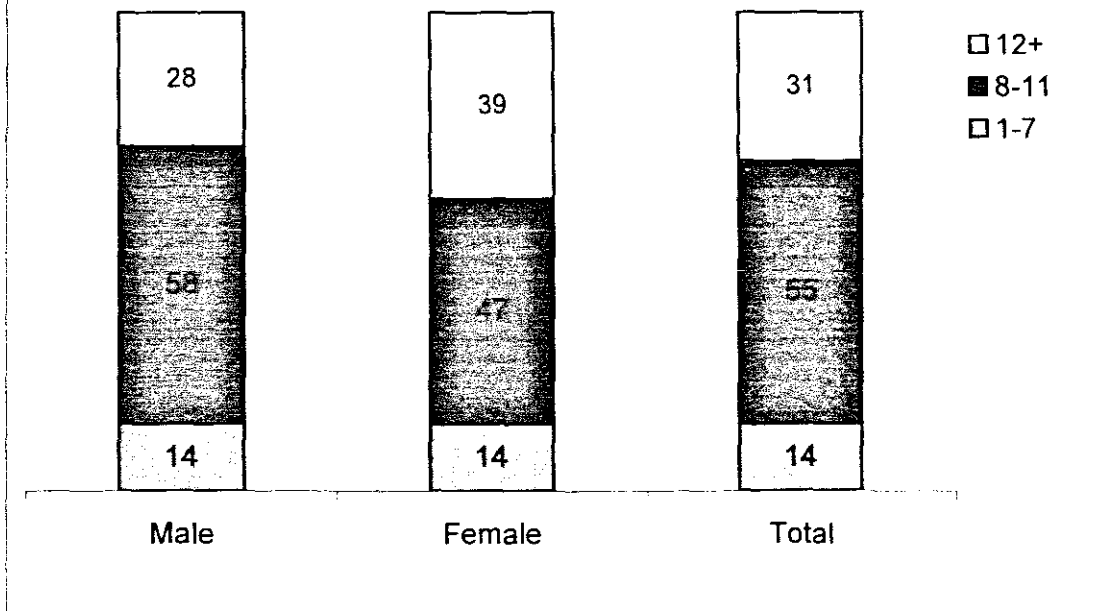


Figure 5 shows the Sequential intelligence scores of the 94 subjects in the study. Sequential processing was determined from performance on the Pattern Completion subtest. From the results it appears that 13.33% of males performed at a below average level, 58.33% performed at an average level and 28.33% performed at a superior level.

In terms of females, 14.29% performed at a below average level, 46.43% performed at an average level and 39.29% performed at a superior level. In summary, 13.64% of all study subjects performed in the below average level, 54.55% at an average level and 31.82% at a superior level.

### **4.3 CONCLUSION**

In this chapter the data that was collected from existing client files was analysed and interpreted. In Chapter 5, the findings will be discussed.

## CHAPTER 5

### DISCUSSION OF FINDINGS

#### 5.1 INTRODUCTION

South Africa, like the rest of the world, seems to be in dire need for more effective prevention and intervention strategies for learning problems.

In the present chapter the results of the study will be discussed, referring back to the initial research questions. Conclusions will be made from the both the literature study and the present study. Differences and resemblances in comparison to other similar studies will be pointed out. Lastly, limitations of the study will be outlined and recommendations for further research will be suggested.

It is important to keep in mind that this study was only a retrospective records review of primary and secondary school learners with learning problems at private practices in the Limpopo Province. An existing database of files was investigated. Results are limited to the sample, which could afford to seek private psychological consultation. Interpretations and conclusions are meant in terms of this population and cannot be generalised to all learners with learning problems. However, a notion is held that this study might relate strongly to learning problems in general.

The aim of the study was to provide answers to these research questions:

- a) To determine the association between learning problems and demographic factors.
- b) To examine the assessment of learning problems.
- c) To describe the profile of learners with learning problems.

## **5.2 FINDINGS REGARDING THE ASSOCIATION BETWEEN LEARNING PROBLEMS AND DEMOGRAPHIC FACTORS**

The findings of the present study support the argument that there appears to be an association between learning problems and certain physiological, psychological and socio-demographic factors.

Particular associations have been identified between the present study and the literature study. The associations referred to here are the association between learning problems, emotional problems, gender, race, developmental delays and age. These associations could imply specific repercussions in terms of the prevention and treatment of *learning problems and are discussed in separate categories.*

Findings from the literature study and present study seem to differ regarding the association between learning problems and second language tuition.

### **5.2.1 Findings on the association between learning problems and emotional problems**

The present study confirms the possibility of an association between emotional problems and learning problems. This association often

forms self-perpetuating cycles (Fernald, 1943:165-172; Natchez, 1968:321; 332,400; Bryant & Bradley, 1985:14; Van Wyk, 1991:5).

However, it is important to keep in mind that these emotional indicators reflect the practitioner's professional opinion of the client and have not been tested empirically.

### 5.2.2 Findings on the association between learning problems and gender

In general the present study agrees with Shapiro et al (1998:77) and Kronenberger (2001:422) that gender can play a role in the occurrence of learning problems. According to Kronenberger there are approximately two to five males with learning problems for every female. This finding might relate to societies' education systems, differences in the brain and gender roles (Gurian & Ballew, 2003:9-11).

However, when taking a closer look, it appears that gender differences in terms of developmental delays were not statistically significant in the present study. Most of the study subjects that were referred for psychological intervention in the present study were males. On the other hand, more females had a difference between their verbal and non-verbal scores. This difference indicates learning problems (Brink, 2002:11). It is important to keep in mind that developmental delays reflect the practitioner's professional opinion of the client and have not been tested empirically.

Also, 15.38% of males performed at a superior level in terms of crystallised ability compared to 31.03% of females. This finding implies that a small percentage of girls rely more than the expected level on previous training, education and cultural background.

Furthermore, 73.85% of males performed at an average level compared to 58.62% of females regarding crystallised ability. It seems as if the distribution among males is more gradual than with females.

In terms of fluid ability, it appears that 68.33% of males and 51.85% of females performed at an average level. However, 21.67% of males performed at a superior level compared to the 33.33% of females. This implies that males and females apply their abilities for adaptation and flexibility in different ways when confronted with unfamiliar situations.

It is important to keep in mind that the study population was not a true reflection of the gender ratio in South Africa. These findings should therefore be interpreted with caution.

### 5.2.3 Findings on the association between learning problems and race

The present study supports the findings of the literature study that race does not necessarily play a role in the aetiology of learning problems (Jiménez et al, 1996:90; Block, 1986:3; Casanave, 1988:5). No significant differences were found in the present study.

However, it is important to point out the existing controversy in the literature in this regard (Donahue et al, 2001:55; Gauteng Department of Education, 1998:12-19; Mantzicopoulos & Neuharth-Pritchett, 1998:122; Edmunds, 1994:11; Denton et al, 2003:5; Salinger, 2003:79; Labov, 2003:129; Liang & Sugawara, 1996:75; Garrett et al, 1994:335; Richter & Grieve, 1991:88; Jensen, undated:1; Arnold & Beer, undated:1).

Furthermore, not much research has been done on subjects that are other than white, middle class or native speakers of English (Jiménez et al, 1996:90; Block, 1986:3; Casanave, 1988:5; Lundberg, 2002:165).

The study done by Jiménez et al (1996:105) on second language tuition had a number of limitations. Only a small sample of learners from different backgrounds was included. Although well motivated, standardised measures have not been implemented.

Another point to consider is that the racial ratio was not a true reflection of the South African population in the present study. Racial findings should therefore be interpreted with caution.

It is important to keep in mind that three quarters of the psychologists were Afrikaans speaking Whites. The other quarter was Northern Sotho speaking. Another possible influential factor could be that clients prefer to approach psychologists with a culture similar to theirs.

#### 5.2.4 Findings on the association between learning problems and developmental delays

Research reveals that developmental delays may be associated with learning problems (Padget et al, 1996:55; Goldberg & Schiffman, 1972:17; Bell et al, 2003:508; Houck, 1884:293).

From the results of the present study, about one half of the subjects presented with developmental delays. Differences in terms of the Similarities, Number Problems, Pattern Completion, Block Designs and Missing Parts subtests appeared significant.

Differences regarding the Similarities subtest could be accounted for by educational background and/or auditory difficulties, which could lead to inconsistent performance. Differences regarding the Number Problems subtest could be accounted for by possible attention and concentration difficulties (University of Zululand, 2002:3, 5; HSRC, 1991:4-11).

Differences regarding the Pattern Completion, Block Designs and Missing Parts subtests could be accounted for by visual perceptual difficulties, uncertainty regarding laterality, perseverance, concentration difficulties, cultural and educational background (University of Zululand, 2002:6-8; HSRC, 1991:4-11).

#### **5.2.5 Findings on the association between learning problems and age**

According to the literature study, learning problems may develop in any school year, but they are more obvious in the foundation phase because most reading is done aloud (Bender & Coetzee, 1995:163; Kronenberger, 2001:417). One study revealed that sixty-seven out of 100 children between the ages of 8 and 16 years were dysphonetic readers, characterised by insensitivity to the sounds in words (Bryant & Bradley, 1985:101-103).

According to the present study, learners between twelve and fourteen years old who are in the intermediate phase (Grade 4-6) seem particularly vulnerable to learning problems.

### 5.2.6 Findings on the association between learning problems and second language tuition

The present study differs from the literature in terms of second language tuition. Being taught in a second language can cause several problems (Beaumont et al, 2002:7; Labov, 2003:130; Baily, 1993:312; University of the Witwatersrand, 2003:3; Figueroa, 1990:682; Garcia & Pearson, 1994:341; Solano-Flores & Nelson-Barber, 2001:568; Lundberg, 2002:165).

The study done by Jiménez et al. had a number of limitations. Only a small sample of learners from different backgrounds was included. Although well motivated, standardised measures have not been implemented. No indication is made concerning learning problems among first language learners. Most of the subjects involved in the present study received tuition in their first language. It cannot be assumed that learners that are taught in their first language necessarily experience less learning problems than those being taught in their second language.

It can be speculated that the above-mentioned contradiction could be ascribed to neurological reasons and might have nothing to do with which language the learner is taught in. In other words, it might be verbal problem. This could be investigated further in future studies.

## 5.3 FINDINGS REGARDING THE ASSESSMENT OF LEARNING PROBLEMS

Findings from the present study support the idea that there should be a minimum of aspects included when assessing learning problems.

There seems to be a specific association with regard to the administration and interpretation of intelligence tests and patterns, perception, informal assessment and integrated results.

Differences among South African psychologists' styles regarding the assessment of learning problems are noticeable. Some of the psychologists administered projective, achievement and perceptual media in conjunction with the intelligence test. These differences in assessment styles could be investigated further in order to guide the development of a more uniform assessment of learning problems.

#### **5.3.1 Intelligence tests**

According to the literature study, one of the components that should be engaged when assessing learning problems is intelligence tests, but not in isolation (Kronenberger, 2001:425; Bell et al., 2003:510; Fernald, 1943:69; Lewkowicz, 2000:1; Brink, 2002: 2). In the present study, the SSAIS-R or NSAIS has been administered in all cases. Reliability and validity of the NSAIS could have been influenced negatively in the present study because of the many dialects of Northern Sotho – especially regarding the Vocabulary subtest. This could have had an impact on the findings of the present study.

#### **5.3.2 Interpreting intelligence tests**

According to the literature study, a successive-level approach is recommended when interpreting results of intelligence tests (Brink, 2002:1; Lyman, 1991:10; Van Niekerk, 1990:82; Kapp: 1990:406; Kronenberger, 2001:425; Kamphaus, 1993:20; Kaufman, 1994:12; Kramer, 1993:5; Naglieri, 1993:16; Sattler, 1992:55; Groth-Marnat,

1999:159). A successive-level approach was followed in the present study.

From the literature study, a qualitative analysis of intelligence tests can provide useful important information for identifying specific learning weaknesses and setting up tailor-made remedial programmes accordingly (Male, 1996:156; Kapp: 1990:407; Bond et al, 1979:78; Bender & Coetzee, 1995:163; Brink, 2002:4; Van Niekerk, 1986:21). The results of the present study support the above-mentioned opinion.

### 5.3.3 Subtest patterns

According to the literature study, a qualitative analysis of intelligence tests allows the psychologist to identify certain subtest patterns (Groth-Marnat, 1999:159; Brink, 2002:15). This approach was followed in the present study and subtest patterns could be identified.

### 5.3.4 Perception

Various researchers stress that learners with learning problems have auditory and visual difficulties (Houck, 1984:295; Beery, 1989:9; Koppitz, 1963:6; Goldberg & Schiffman, 1972:17; Fernald, 1943:176; Kapp: 1990:406; Hefer, 2002: 105,111). Included is the inability to distinguish between similar stimuli. According to the University of Zululand (2002:3-6) and HSRC (1991:4-11) the SSAIS-R can be used to detect perceptual difficulties.

Although the present study did not specifically investigate perception, derivations could be made from the intelligence tests results by means of a qualitative analysis. Findings from the present study support the opinion that perception can play a role in the learning process.

### 5.3.5 Informal assessment

According to the literature study, informal assessment should comprise of informal observation, an informal interview, informal reading inventories and ongoing assessment in the classroom (Houck, 1984:300; Du Toit, 1996:88; Van Niekerk, 1986:217; Groth-Marnat, 1999:77). In the present study the informal interview and observation were included, which added to the foundation of the qualitative analysis.

### 5.3.6 Integrated results

Results of an assessment should all be integrated (Kronenberger, 2001:430-431). In the present study, the association between learning problems, demographic factors, SSAIS-R scores, clinical observation and history was determined in order to obtain an integrated picture of the problem.

According to the literature study, a battery of tests should be used when assessing learning problems (Raggett et al, 1979:32; Padget et al., 1996:55; Bell et al., 2003:516). A uniform assessment of learning problems should be the aim of research (Bell et al., 2003:509; Houck, 1984:297).

*In the present study, only a number of the files contained comprehensive protocols, indicating inconsistency in South African psychologists' styles. This could be investigated further in future studies.*

## 5.4 FINDINGS REGARDING THE PROFILES OF LEARNERS WITH LEARNING PROBLEMS

From the literature study, certain subtest patterns from intelligence tests seem characteristic of learners with learning problems (Kronenberger, 2001:425).

The present study supports the literature study in terms of the emotional functioning of the learner with learning difficulties, differences between verbal and non-verbal scores, performance on the Comprehension subtest, higher non-verbal scores, crystallised and fluid intelligence, subtest scatter and global IQ score.

Findings from the literature study and present study seem to differ regarding perception, individual subtests and sequential versus simultaneous processing.

The above-mentioned associations and differences should be taken into consideration when prevention and intervention programmes are designed and implemented.

### 5.4.1 Emotional functioning

The present study supports the finding that learners with learning problems often exhibit emotional difficulties and visa versa (Fernald, 1943:165-172; Natchez, 1968:321; 332,400; Bryant & Bradley, 1985:14; Van Wyk, 1991:5). It is important to keep in mind that, in the present study, the concept emotional difficulties has not been tested empirically, but reflects the opinion of the practitioner.

#### 5.4.2 Difference between verbal and non-verbal scores

According to the literature study children with learning problems often exhibit a difference between their verbal and non-verbal scores. A difference of 12-15 or more might be significant (Groth-Marnat, 1999:159; Brink, 2002:2). The present study supports this finding as 30% of the study subjects had a difference of more than 15.

#### 5.4.3 Performance on the Comprehension subtest

According to the literature study learners with learning problems generally score in the middle of the range on the Comprehension subtest (Kronenberger, 2001:425). The present study supports this finding. About eighty-six percent of the study subjects performed at an average level on this subtest.

#### 5.4.4 Higher non-verbal IQ scores

Learners with learning problems tend to have higher non-verbal IQ scores than verbal IQ scores (Kronenberger, 2001:425-426). According to the present study about 61% of the study subjects met this criterion and support thus the findings of the literature study.

#### 5.4.5 Crystallised intelligence

Crystallised intelligence can reflect the extent of a learner's accumulated knowledge (Groth-Marnat, 1999:140). From the present study it appears that 10.64% of all study subjects performed at a below-average level and 69.15% fell in the average range. It can thus be concluded that a high percentage of the study subjects accumulated knowledge at the expected level, based on their previous training, education and cultural background.

#### 5.4.6 Fluid intelligence

In terms of fluid intelligence, 11.49% performed below average and 63.22% performed at an average level. This implies that 63.22% of the study subjects have the ability to adapt and be flexible when confronted with unfamiliar situations.

#### 5.4.7 Subtest scatter

When assessing learning problems, it is recommended that scatter on the subtests of intelligence test is investigated (Wright & Darr Wright, 2000:34; Brink, 2002:13).

In the present study, 11% and 10% of the study participants showed a difference of  $\leq 7$  on both scales. About three percent on the verbal scale and seven percent on the non-verbal scale had a difference of  $\geq 13$ .

#### 5.4.8 Global IQ score

Learners with learning problems (a learning disability) score at least in the average range (90-109) on the full scale, although scholastic achievement doesn't correlate with this (Natchez, 1968:413; Kronenberger, 2001:425-426; Padget et al., 1996:55; Goldberg & Schiffman, 1972:17). Subjects in the present study were only included if they fitted this criteria.

Differences that were detected between the literature study and the present study relate to certain individual subtests and sequential versus simultaneous processing.

#### 5.4.9 Individual subtests

From the literature study it appears that learners with learning problems often experience difficulties with short-term memory

(Whiteley & Smith, 2001:30; Padget et al., 1996:55; 65). It seems that they often fail to distinguish between similar stimuli (Fernald, 1943:176).

A limitation of the literature study's findings is that it is not mentioned whether their findings are based on visual or auditory short-term memory. It also does not stipulate whether their findings are based on short-term memory for meaningful or meaningless material.

According to the present study, an insignificant percentage of the study subjects presented with auditory short-term memory problems. This could be due to the fact that memory has not been tested extensively and because the test was presented in a story form (meaningful material).

#### **5.4.10 Sequential versus simultaneous processing**

It appears as if learners with learning problems struggle with sequential processing (Houck, 1984:296; Brink, 2002:11).

The findings of the present study contradict this finding. Only 13.64% of the study subjects performed at a below-average level and patterns were much the same for males than for females.

In fact, 31.82% of the study subjects performed at a superior level. This could be accounted for by well developed visual perception, laterality and the subjects' approach towards tasks (University of Zululand, 2002:6; HSRC, 1991:4-11). Also, in the present study the Coding subtest has not been taken into consideration because it is an additional subtest and does not appear as part of the NSAIS. This finding should be interpreted with caution.

## 5.5 LIMITATIONS OF THE PRESENT STUDY

The present study was limited because of a number of reasons. Firstly, the sampling method chosen was extreme or deviant sampling. This implies that the sample was chosen in a subjective way. Extreme or deviant sampling was chosen because of incomplete protocols in some of the record files and to be able to obtain enough information.

The sample size was only 94 and findings can therefore not be generalised to the general population. Regarding the study population, gender and racial ratios did not reflect true South African ratios. More boys than girls were included in the study. Findings are limited to the sample taken from the private practices in the Limpopo Province.

Furthermore, the study was limited because no uniformity existed between the various psychologists' assessment styles, except in the case of the intelligence test. Here, the use of the NSAIS could have had reliability and validity implications because of the many Northern Sotho dialects that exist.

Findings can not be generalised for various reasons: the majority of children with learning problems cannot afford private consultations, the sample size was small and gender and racial ratios did not reflect true South African ratios.

Since socio-economic circumstances cannot be changed and falls outside the scope of this study, the focus falls on what the psychologist, teacher and learner can do to facilitate the learning process.

## 5.6 RECOMMENDATIONS FOR THE FUTURE

In light of the preceding conclusions, a number of recommendations for future assessments and studies are proposed.

It is suggested that psychologists administer a representative battery of tests when assessing learning problems. A representative test battery should at least include an individually administered standardised intelligence test, achievement tests, an emotional assessment, visual and auditory perceptual tests. Liaison with the class teacher might be helpful as well.

Hefer (2005:18) suggested a tests battery for assessing learning problems. Supplementary neuro-psychological tests could also be included. Further studies could investigate the association between *neuro-psychology, perceptual and learning problems* further.

Differences between South African educational psychologists' assessment styles could be investigated further in order to guide the development of a more uniform assessment procedure for learning problems. It appears viable to involve psychologists from other categories. Although learning problems do not fall in their scope of practice, the reality is that many other practitioners, especially clinical psychologists, deal with learning problems issues due to the *unavailability of educational psychological services to the public*.

Another question that rose from the findings is the reason why so many learners are referred between 12 and 14 years of age and not when they are younger. Early intervention could bridge the gap between potential and actual scholastic performance.

Now that the uniqueness of learning problems has been identified, it became clear that individual tailor-made remedial programmes should be designed accordingly. This could be tested in a follow-up study with a possible pre-test and post-test design.

Furthermore, future studies could empirically investigate the association between learning problems, emotional functioning and developmental delays. The relative impact of variables to predict learning problems could also be included.

Future studies could conduct a similar study based on gender and racial ratios that are true reflections of the South African population.

Differences between the literature study and the current study could be a focus point for further studies, especially regarding certain aspects of the aetiology and profiles of learners with learning difficulties. More specifically, second language tuition, perception, individual subtests and sequential versus simultaneous processing are indicated.

## **5.7 CONCLUSION**

Despite much research done on learning problems, it still appears as if academic standards are dropping. Just like the rest of the world, South Africa seems to be in need for a solution-focused approach in the prevention and treatment of learning problems.

The present study was an attempt to take a step closer to this goal. A better understanding of the association between learning problems, demographic factors, SSAIS-R scores, clinical observation and history

could assist in many ways. It has become clear that each learner's profile is unique.

The current study strongly suggests that early efficient screening could identify the precursors of learning problems. Early intervention could minimise or eliminate the effects of these underlying precursors.

Specific differences have been identified in the assessment styles of psychologists and recommendations have been made towards a more universal procedure.

These findings can be used to identify and treat learning problems at an early stage. It is a well-known fact that certain types of therapy are more effective when the learner is still in the Foundation Phase. From a well-planned assessment, tailor-made remedial programmes can be designed. It is important to keep in mind that designing such programmes requires knowledge about remedial intervention and might require *liaison with a remedial therapist*.

The literature study and the present study appear in close agreement regarding the association between learning problems and learners' profiles, assessment and profiles of learners with learning problems. The expectation is that this study would contribute to the generation of similar research and that the findings of the present study are found to be useful, especially about the employment of educational psychologists in the state.

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# APPENDIX A: ABSTRACTION FORM

Study Id

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## A. DEMOGRAPHIC INFORMATION:

1. Age: \_\_\_\_ yrs
2. Gender:  Male       Female
3. Race:  Black    White       Indian    Coloured
4. District: \_\_\_\_\_
5. School Name: \_\_\_\_\_      Type:  Primary    Secondary
6. Grade \_\_\_\_\_
7. Phase:  Foundation       Intermediate       Senior       FET

## B. SSAIS-R SCORES:

		<u>Scores</u>
<b>Verbal</b>	Vocabulary	
	Comprehension	
	Similarities	
	Story memory	
	Number problems	
	Memory for digits	
<b>Non-verbal</b>	Pattern Completion	
	Block Designs	
	Missing Parts	
	Form Board	
	Coding	
	Mazes	
<b>Global IQ</b>		
<b>Verbal IQ</b>		
<b>Non-Verbal IQ</b>		

## C. CLINICAL OBSERVATION & HISTORY:

	<u>Yes/No</u>
Developmental Delays	
Emotional Indicators	

## **APPENDIX B: Rational for each SSAIS-R subtest**

### **A. VERBAL SUBTESTS:**

#### **Vocabulary**

This subtest measures a person's verbal intelligence and verbal learning ability. The score obtained from this subtest is an indicator of a person's language development and use of language. Long-term memory and concept formation play a role.

#### **Comprehension**

This subtest is based on the assumption that social adjustment and social judgement can be learned through everyday life experiences and formal education. Logic reasoning is necessary to evaluate this information and to apply this in a socially acceptable way.

#### **Similarities**

Logic, abstract reasoning, verbal concept formation and long-term memory play a role in performance on this subtest. A rule must be deduced in order to be able to make a classification. The ability to distinguish between essential and non-essential similarities is important.

#### **Number Problems**

This subtest measures numerical reasoning ability and underlying logic reasoning, abstract thought and mental alertness. Productive concentration is also important for success.

#### **Story Memory**

This subtest measures short-term memory. Meaningful verbal learning material is used to measure the testee's ability to pay attention in a relatively simple situation (HSRC, 1991:4-7).

## **B. NON-VERBAL SUBTESTS:**

### **Pattern Completion**

This subtest is a non-verbal measuring aid of underlying logic thoughts. Accurate visual perception, concrete reasoning by means of figures, concept formation and concentration are important for success on this subtest. Mental manipulation of the parts of the design implies synthesis regarding the easier items. More difficult items probably also requires verbalisation of the perceived relations.

### **Block Designs**

This subtest measures non-verbal intelligence and non-verbal problems solving ability. The testee must solve spatial problems by means of logic reasoning. Forms must be perceived and analysed by breaking the whole down into components. Then testee must then put together the components into an identical design.

This subtest also measures the testee's ability for non-verbal concept formation, including perceptual organisation, spatial visualisation and orientation as well as abstract conceptualisation. Concentration and visual-motor integration are also important.

### **Missing Parts**

This subtest measures reality break, knowledge and comprehension of familiar situations, the ability to distinguish between essential and non-essential visual information and the ability to see a whole in relation to its parts. Visual concentration and organisation are important. Perceptual and conceptual abilities are being measured because these abilities are also involved in visual recognition, identification and comprehension of familiar objects and situations.

### **Form Board**

This subtest measures visual perception, organisation, concept formation and the ability to see the underlying relation between objects. Visual-motor integration, where motor activity is guided by visual perception and senso-motor feedback, is also important (HSRC, 1991:7-11).